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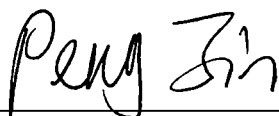
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**Supplemental Soil Gas
Investigation and Sub-Slab
Depressurization (SSD) Pilot Study
Summary**

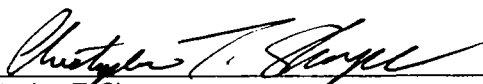
Former Bally Engineered Structures Facility
Bally Borough, Berks County, Pennsylvania

November 2007

ARCADIS



Peng Jin
Engineer II



Christopher T. Sharpe
Project Scientist



Frank C. Natitus, P.E.
Principal Engineer

**Supplemental Soil Gas
Investigation and Sub-Slab
Depressurization (SSD) Pilot
Study Summary**

Former Bally Engineered
Structures Facility

Prepared for:
American Household, Inc.

Prepared by:
ARCADIS U.S., Inc.
6 Terry Drive
Suite 300
Newtown
Pennsylvania 18940
Tel 267 685 1800
Fax 267 685 1801

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1. Introduction

On behalf of American Household, Inc. (AHI), ARCADIS U.S., Inc. (ARCADIS) has prepared this report to summarize the activities and results of the supplemental soil gas investigation and the Sub-Slab Depressurization (SSD) pilot study conducted in the Impress Industries area at the former Bally Engineered Structures (BES) facility (the facility or Site) in July 2007 (**Figure 1**). Previous vapor intrusion investigation activities conducted to date have identified an area of concern with respect to vapor intrusion in a portion of the Site occupied by Impress Industries. This report documents the activities conducted to further refine the understanding of the distribution of sub-slab vapors related to past manufacturing activities and presents the results of the pilot-scale SSD test conducted at the Site. A mitigation plan, which will use a full-scale SSD system to mitigate potential sub-slab soil vapor intrusion, and the indoor and ambient air quality monitoring plan are also included in this report.

1.1 Project Scope and Objectives

Two main objectives of the investigation and pilot study had been outlined in the Revised Vapor Intrusion Investigation and Pilot Study Work Plan (ARCADIS, 2007). The first objective of the proposed investigation was to further refine the understanding of the extent of vapor intrusion of site-related Constituents of Potential Concern (COPCs) in the Impress Industries portion of the Site. The second objective was to collect the data necessary as part of the pilot study to evaluate the effectiveness of SSD. Based upon these goals the investigation was limited to vapor intrusion by COPCs in the Impress Industries portion of the Site identified on **Figure 2**.

The following samples were collected in support of the supplemental soil gas investigation and the SSD pilot study completed in July 2007:

- 20 sub-slab soil vapor samples were collected within the Impress Industries area;
- Two indoor air quality (IAQ) samples were collected within the Impress Industries area; and,
- Two ambient air samples were collected outside the Impress Industries area.

1.2 Data Evaluation and Reporting

Data gathered during this supplemental investigation and pilot study have been evaluated as follows:

- Additional sub-slab sample results were used to refine the area requiring mitigation;
- Indoor air sample results were used to refine the understanding of Site-related COPCs intrusion into the indoor air; and,
- Pilot study results (vacuum measurements and sub-slab vapor data from the refined grid area) were used to aid in the design of the proposed SSD system for the Impress Industries area.

1.3 Report Organization

This report consists of the following five sections besides this introduction:

- Section 2 presents background information, a summary of historical facility soil and vapor intrusion investigations;
- Section 3 presents details of the supplemental soil gas investigation and SSD pilot study performed in July 2007 and a discussion of the laboratory analytical results including data validation;
- Section 4 presents the mitigation plan, including the full-scale SSD system design, implementation and performance monitoring activities;
- Section 5 presents the indoor and ambient air quality monitoring plan, including sampling locations, schedule, and reporting; and,
- Section 6 provides the references used to develop this report.

2. Background

The Site is located on the southwestern edge of the Borough of Bally, Berks County, Pennsylvania (**Figure 1**). The Site was formerly a manufacturing facility for the production of insulated freezer cases. Historic operations included the use of

chlorinated compounds to clean and degrease molds, nozzles and small parts used in the manufacturing process. **Figure 2** depicts the Facility layout.

Impress Industries occupies a large warehouse (~115,000 square feet) portion of the Facility. It is currently used for warehousing and/or storage. It was constructed in stages from approximately 1949-1973. The southwest portion of this area was formerly used as a lagoon/surface water impoundment.

The following subsections describe historical investigations at the Site.

2.1 Soil Investigation History

Several phases of soil investigations have occurred at the Site. A series of mobilizations were performed between 1987 and 1989. Soil sampling during this period was conducted using direct push technology at approximately 30 locations. A photoionization detection (PID) device was used to check soil sample headspace for volatile organic compounds (VOCs).

An additional phase of soil sampling was conducted in November 1994, again using direct push technology. This 1994 investigation evaluated approximately 30 additional locations by collecting soil, water, and vapor samples. Soil samples were collected from 3 to 5 different depth intervals in each boring. Additionally, water samples were collected at eleven of the soil sampling locations and soil gas was collected at one location SS-114 about 200 feet to the west of the Impress Industries building. Concentrations of trichloroethene (TCE), 1,1,1-trichloroethane (TCA) and 1,1-dichloroethene (DCE) in the single soil vapor sample were below detection limits.

2.2 Vapor Intrusion Investigation History

In 2003, the USEPA requested further site characterization activities with respect to the risks posed by the potential for vapor intrusion. Provided below are a summary of reports related to the subsequent investigation activities:

- October 2003 - AHI submitted a Work Plan to the USEPA detailing a plan to conduct sub-slab vapor sampling at the facility;
- May 2004 – AHI submitted the results of the investigation proposed in the October 2003 Work Plan;

- March 2005 - AHI submitted a Work Plan for additional investigation at the facility;
- June 2005 – AHI submitted the results of the investigation proposed in the March 2005 Work Plan;
- January 2006 - AHI submitted a supplemental Work Plan to complete additional investigation at the facility;
- December 2006 – AHI submitted the results of the investigation proposed in the January 2006 Work Plan;
- February 2007 – USEPA completed a Trace Atmospheric Gas Analyzer (TAGA) investigation at Impress Industries and Luciana & Sons (former L&Z Public Storage) areas; and,
- April 2007 – AHI submitted a Work Plan to complete additional vapor intrusion investigation and conduct a pilot study using SSD.

2.3 Summary of Impress Industries Vapor Intrusion Investigation Results

A total of six sub-slab and four indoor air samples have been collected in this area. The highest sub-slab TCE concentration (210,000 micrograms per cubic meter (ug/m^3)) was observed in the southwest portion of the area which corresponds with the suspected location of a former lagoon/surface water impoundment. TCE concentrations detected in indoor air samples in early 2006 range from 11 to $40 \text{ ug}/\text{m}^3$. However, TCE concentrations detected in August through October 2006 range from 180 to $490 \text{ ug}/\text{m}^3$. Subsequently, USEPA completed an indoor air investigation in this area using their TAGA unit. The results of the TAGA investigation indicated that the presence of TCE was likely from a sub-slab source. Although significant attenuation has been observed from the sub-slab to the indoor air, the indoor air results indicated that additional delineation and pilot testing for SSD was warranted. A summary of the results for the Impress Industries area is provided on **Figures 3 and 4** and **Table 2**.

3. 2007 Supplemental Soil Gas Investigation / Sub-Slab Depressurization Pilot Study

In 2007, during discussions of the 2006 results with USEPA, it was agreed that additional investigation and testing was warranted to evaluate a program for mitigating the potential COPC intrusion into the indoor air.

3.1 Supplemental Soil Gas Investigation

In order to delineate potential vapor intrusion in the Impress Industries area, additional sub-slab vapor samples and indoor air samples were collected prior to conducting the SSD Pilot Study. From July 10 to 12, 2007, a total of 20 sub-slab soil vapor samples were collected in a grid pattern. Four sub-slab vapor samples (SS-1, SS-13, SS-19, and SS-20) were collected in the vicinity of the pilot study (**Figure 6**) to support the pilot test by refining the extent of sub-slab COPC concentrations.

Additionally, two indoor and two ambient air samples were collected using 100 percent Selective Ion Monitoring (SIM)-certified 6 L Summa canisters over an 8 hour interval using a flow restrictor to control the sampling rate. One indoor location (IAQ-1) was located in the pilot study vicinity next to the sub-slab sampling location SS-19. The other indoor location (IAQ-2) was collected next to the sub-slab sampling location SS-8. Two ambient air (outdoor) samples were also collected at locations designated as upwind and downwind. The upwind ambient air sampling location (AQUW) was outside of the southwestern corner of the Impress Industries building, and the downwind ambient air sampling location (AQDW) was outside of the northwestern corner of the Impress Industries building.

The July 2007 sampling locations are shown on **Figure 6**. Samples were collected according to the Standard Operating Procedure (SOP) as defined in the Revised Vapor Intrusion Investigation and Pilot Study Work Plan (ARCADIS, 2007) and provided in **Appendix A**.

3.2 SSD Pilot Study

A pilot scale field test was conducted to evaluate the feasibility of using SSD to mitigate the potential sub-slab soil vapor intrusion. The following subsections discuss the results of the field test.

3.2.1 SSD Pilot Study System Construction

Following the additional investigation in the Impress Industries area, a pilot test was conducted to evaluate the effectiveness of SSD for mitigation of sub-slab soil vapor intrusion. The pilot study was implemented by installing a SSD system consisting of a single SSD venting point (a sealed in place pipe penetrating the floor), to vent the subsurface using a rotary blower. The zone of influence for the venting point was evaluated by measuring the vacuum responses at the following radial distances: 5 ft

(VMP-A), 10 ft (VMP-B), 15 ft (VMP-D) and 30 ft (VMP-C) from the venting point. Location VMP-D was located at a point approximately half-way between nearest exterior wall and the venting point. The locations of the vacuum (SSD) point and associated vacuum monitoring points are shown on **Figure 6**. Implementation of the pilot study was completed in accordance with the SOP provided in **Appendix A**.

The SSD pilot study system, shown on **Figure 5**, included the following components:

- One vacuum point and four vacuum monitoring points (PVC pipe installed through the concrete slab and sealed in place);
- One rotary air blower to provide depressurization in the sub-slab;
- One flow meter and one temperature gauge to monitor the SSD effluent parameters;
- Vacuum gauges with appropriate measuring range to monitor the sub-slab vacuum response; and,
- Flexible hoses to convey exhaust gases to the building exterior.

Vacuum Monitoring Points (VMPs) Installation

A nominal 3" diameter hole was cored for each of the VMPs, in which a 1" diameter schedule 40 PVC pipe with a preinstalled vacuum measurement port was inserted and placed directly into the gravel under the concrete slab. The annular space around piping was then sealed with non-shrink grout to a depth at least equivalent to the thickness of the concrete slab. The VMP was then completed by connecting a vacuum gauge with appropriate range to the vacuum measurement port.

Depressurization Point Installation

A nominal 6" diameter hole was cored through the concrete slab for the SSD point, in which a 4" diameter schedule 40 PVC pipe was installed. The PVC SSD wellhead included preinstalled vacuum measurement/sampling and exhaust ports. The well head was placed directly into the gravel underlying the concrete slab. The annular space around piping was then sealed in place using non-shrink grout. The depth of the seal was at least equivalent to the thickness of the concrete slab. A vacuum gauge was then connected to the SSD wellhead vacuum measurement/sampling port.

3.2.2 SSD Pilot Study Implementation

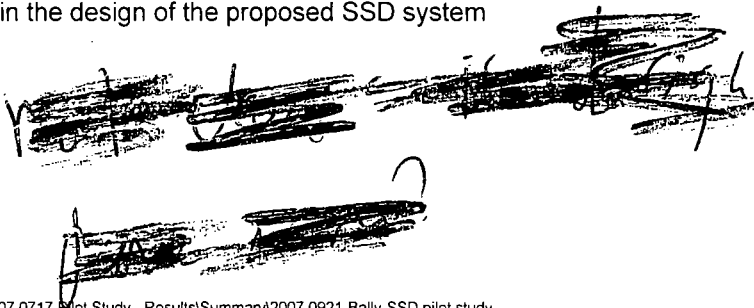
The SSD pilot study was proposed to evaluate the feasibility of SSD as an alternative for the mitigation of potential vapor intrusion in the Impress Industries area. In order to evaluate the effectiveness of SSD, the vacuum responses to the SSD point were measured at locations VMP-A, VMP-B, VMP-C, and VMP-D, described above. This provided a metric of the vacuum response-radial distance relationship necessary to design the full-scale SSD system. Additional required design parameters such as flow rate and required vacuum were obtained as part of the study.

During the SSD test, depressurization was achieved by venting the subsurface at three flow rates. The resulting sub-slab vacuum profiles created in the SSD vicinity were monitored at the four VMP points. Measurements of vacuum, flow rate and temperature were collected at predetermined intervals. A PID was used to monitor VOC levels at the SSD wellhead and exhaust discharge points. For design purposes, an effluent vapor sample was collected from the SSD sampling point during the first stage of the test using a 6L Summa canister. The sample was sent to Air Toxics Ltd., Folsom, California (Air Toxics) for analysis to quantify the concentration of Site-related COPCs expected in system effluent.

During the first stage of the test [flow rate of 40 cubic feet per minute (cfm)], measurements were collected at 10-minute intervals for a period of 90 minutes. During the other flow steps (20 cfm and 45 cfm) measurements were collected at 10-minute intervals for a period of 30 minutes. The vacuum response quickly stabilized at all three flow rates providing several opportunities at which to evaluate vacuum response at each monitoring point.

3.3 Analysis and Results

The following sections present the results of the July sub-slab soil vapor and indoor air sampling event and SSD pilot study. The indoor air sample results were used to evaluate the extent of sub-slab soil vapor COPC intrusion into the indoor air. Sub-slab sample results have been used to evaluate the area beneath the slab requiring mitigation. Pilot study results (vacuum measurements and sub-slab vapor data from the sampling grid area) will be used to aid in the design of the proposed SSD system for the Impress Industries area.



3.3.1 Analytical Methods

The samples collected from the Impress Industries area were submitted to Air Toxics for gas chromatography/mass spectroscopy (GC/MS) analysis by modified Method TO-15 for the COPCs listed in **Table 1**.

Sub-slab vapor samples were analyzed by the low-level TO-15 method and indoor/ambient air samples were analyzed by the SIM TO-15 method. Although both methods are modified for low level VOCs, low-level TO-15 method involves a full GC/MS scan mode by continuously scanning a wide range of mass to charge ratios, while SIM TO-15 method uses a select ion monitoring mode for compounds on the target list. Target laboratory reporting limits (RL) for each method are included in **Table 1**. Concentrations presented in parts per billion volume (ppbv) were converted to $\mu\text{g}/\text{m}^3$ using the following equation:

$$\mu\text{g}/\text{m}^3 = (\text{ppbv} \times \text{molecular weight})/24.45$$

where 24.45 is the molar volume of air, in liters, at 25°C and 760 torr.

3.3.2 Indoor and Ambient Air Sampling Results

The indoor air quality and ambient air quality results are provided in **Table 3**. For the purpose of evaluating sample analytical results, observed concentrations were compared to:

- USEPA (2006) Region 3 Risk-Based Concentrations (RBC) for ambient air under a residential land-use; and,
- Pennsylvania Department of Environmental Protection (PADEP) (2004) Act 2 Medium-Specific Concentration for Indoor Air Quality (MSC_{IAQ}) under a non-residential land use.

TCE, 1,1-DCE and 1,1,1-TCA were detected in samples IAQ-1 and IAQ-2. Both samples exhibited lower concentrations than were observed in samples collected from the Impress Industries area during either of the past two sampling events (**Table 2** and **Figure 4**). As presented in **Table 3**, COPCs were detected in indoor air as follows. At IAQ-1; 19 $\mu\text{g}/\text{m}^3$ TCE, 2 $\mu\text{g}/\text{m}^3$ 1,1-DCE and 5 $\mu\text{g}/\text{m}^3$ 1,1,1-TCA were detected. At IAQ-2; 53 $\mu\text{g}/\text{m}^3$ TCE, 23 $\mu\text{g}/\text{m}^3$ 1,1-DCE and 62 $\mu\text{g}/\text{m}^3$ 1,1,1-TCA were detected. The TCE concentration at IAQ-2 was slightly higher than the PADEP Nonresidential TCE

MSC_{IAQ}. TCE concentrations at both locations were higher than the USEPA Region 3 Residential Ambient Air RBC, reaffirming that TCE is the primary COPC for indoor air.

Similar to what was observed during the August 2006 sampling event, TCE, 1,1-DCE and 1,1,1-TCA were COPCs found in the ambient air samples (AA-East and AA-West). In Sample AQDW, TCE, 1,1-DCE and 1,1,1-TCA were detected at concentrations of 0.64 ug/m³, 0.36 ug/m³ and 0.63 ug/m³, respectively, while in sample AQUW, TCE was the only COPC detected at a concentration of 0.33 ug/m³.

3.3.3 Supplemental Sub-Slab Sampling Results

Analytical results of the July 2007 sampling event are presented in **Table 3**. During the sub-slab soil vapor sampling, the flooring was observed to be approximately seven-inch thick competent concrete.

TCE, 1,1-DCE and 1,1,1-TCA were the most frequently detected Site-related COPCs in the sub-slab vapor samples. Cis-1,2-Dichloroethene (cis-1,2-DCE) was only found at locations SS-4 and SS-19, while 1,1-Dichloroethane (1,1-DCA) and VC were not detected above the laboratory reporting limits.

As shown on **Figure 6**, TCE concentrations in the sub-slab soil vapor ranged from 180 to 4,200,000 ug/m³ below the Impress Industries area and were greater than 1,000,000 ug/m³ in the middle and southern central areas of the building at sampling locations SS-3, SS-10, SS-11, SS-12 and SS-13, with a peak of 4,200,000 ug/m³ at location SS-11. 1,1-DCE and 1,1,1-TCA were found to have concentrations ranging from 48 to 1,500,000 ug/m³ and from 67 to 1,800,000 ug/m³ among detected samples, respectively. The highest concentrations for both 1,1-DCE and 1,1,1-TCA were found in the middle central area of the building at location SS-10.

Some of the former sub-slab vapor sampling results which were used to support the July 2007 soil vapor investigation and will be aid in SSD system design are also shown on **Figure 6**.

3.3.4 Impress Industries Area Attenuation Factor

Attenuation has been found as one of the most important factors influencing the potential vapor intrusion pathway for Site-related COPCs in the Impress Industries building. TCE, as the primary COPC detected during indoor air quality sampling, was used to calculate a Site-specific attenuation factor based on the July 2007 sampling

results. An attenuation factor of 1.9×10^{-5} was calculated by dividing the average of indoor air TCE concentrations by the average of sub-slab soil vapor TCE concentrations greater than 1,000,000 ug/m³.

Based on this attenuation factor, the projected indoor air TCE concentrations at the area of sub-slab TCE concentrations between 500,000 and 1,000,000 ug/m³, between 100,000 and 500,000 and less than 100,000 ug/m³ were averaged at 12.5, 3.3 and 0.6 ug/m³, respectively. Those projected indoor air TCE concentrations are significantly lower than the Nonresidential PADEP TCE MSC_{IAQ}.

3.3.5 Supplemental Sub-Slab Depressurization Pilot Study Results

The SSD pilot study was implemented in the southeastern part of the Impress Industries building (**Figure 6**). The pilot test evaluated the vacuum responses of the subsurface at three different flow rates as previously discussed.

The observed sub-slab vacuum responses in the vicinity of the pilot study resulting from the three applied flow rates are presented in **Table 4**. The flow rates of 20, 40 and 45 cfm generated vacuum pressures of 3.4 inches, 10 inches and 13 inches of water, respectively, at the SSD-1 wellhead. Vacuum pressure equilibrium was reached in less than 10 minutes at all three flow rates at the SSD-1 wellhead and all vacuum monitoring points.

TCE was detected at a concentration of 260,000 ug/m³ during the 40 cfm test and was the only COPC found in the effluent sample as shown in **Table 3** and on **Figure 6**. The SSD point and the exhaust discharge point were also monitored with a PID during the pilot test, at the same frequency as the vacuum measurements, and the PID results are provided in **Table 4**. PID readings during the test were relatively steady at any given flow rate; however, a direct relationship between concentration and flow rate was established during the test. This is a positive indication that the pilot system was operated in the range where either the radius of influence was increasing or, at a minimum, where increased flows resulted in increased mass recovery.

3.4 Data Validation Summary

The purpose of data validation is to determine the reliability of the chemical analyses and the accuracy and precision of data generated by the laboratory. The quality of laboratory data was evaluated by comparison to a set of quality control criteria, including precision, accuracy, and completeness.

Nine analytical data packages were generated by the laboratory for the July 2007 samples. The laboratory reports were reviewed for completeness and compliance with the deliverable requirements. A Level M3 data validation was completed upon data package receipt. Data are provided electronically in **Appendix C**. Method blanks were prepared and analyzed in conjunction with the field samples to monitor potential contamination impacts during analysis. No target compounds were detected in any of the method blanks. Laboratory control samples (LCSs) were included with each analytical batch to establish method control within the laboratory environment. All LCS analytical results associated with project samples were acceptable. Field duplicates were collected to evaluate precision of sample collection as well as analytical method performance. Based on the relative percent difference values, calculated from the concentrations of like target compounds in both of the duplicate samples, TCE, 1,1-DCE and 1,1,1-TCA were qualified as estimated (J) in both samples at location SS-9, and TCE was qualified as estimated (J) in both samples at locations SS-10 and SS-18.

Based on the data validation, the data gathered under this investigation meet the project and analytical data quality objectives. One hundred percent of the samples were analyzed as collected and as requested on the chains of custody or corrected through communication with the project chemist. The data are considered to be of known and documented quality. One hundred percent of the data generated are usable for the intended purpose as qualified during the review and verification assessment. Data validation reports are provided in **Appendix C**.

3.5 Summary and Conclusions

Based on the results of the supplemental vapor intrusion investigation and the SSD pilot study, the following were observed:

- TCE is the primary COPC in indoor air. The TCE concentrations for the most recent indoor air sampling event were lower than the August/October 2006 sample results and were consistent with the February 2006 sample results.
- Sub-slab soil vapor sampling was completed in a grid pattern to evaluate COPC distribution in the Impress Industries area. The concentrations of the Site-related COPCs in the sub-slab soil vapor were found to be significantly elevated compared to previous sampling events. TCE, 1,1-DCE and 1,1,1-TCA were frequently detected Site-related COPCs. An area of TCE concentrations greater than 1,000,000 ug/m³ was delineated at the middle and south-central areas of the

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building, with a peak of 4,200,000 ug/m³ at sampling location SS-11 at the center of the building.

- Based on the July 2007 indoor air and sub-slab soil vapor results, an attenuation factor (1.9×10^{-5}) was developed for the Impress Industries area. Based on this attenuation factor, the projected indoor air TCE concentrations at the area of sub-slab TCE concentrations less than 1,000,000 ug/m³ are significantly lower than the Nonresidential PADEP TCE MSC_{IAQ}.
- A SSD pilot study was implemented to investigate the feasibility and effectiveness of proposed SSD system for the Impress Industries area. The results of the pilot study indicate that SSD is a suitable mitigation approach for the Impress Industries area.

4. Mitigation Plan

In order to delineate the extent of Site-related COPCs, a series of sub-slab soil vapor and indoor/ambient air quality investigations have been conducted at the Site, including sub-slab soil vapor sampling in 2004, tracer gas investigation in 2005, facility vapor intrusion evaluation in 2006/2007, and supplemental sub-slab soil vapor and indoor/ambient air quality investigations in the Impress Industries building in 2007. Comparing the historical data and the results of the 2007 investigations showed elevated levels of COPCs in sub-slab soil vapor, primarily TCE, 1,1-DCE and 1,1,1-TCA. Those COPCs were also detected in indoor air above the PADEP Nonresidential Indoor Air MSC_{IAQ}. Based on these results, a SSD system will be designed and installed to mitigate potential migration of sub-slab soil vapor to indoor air.

A SSD pilot study conducted along with the 2007 supplemental investigations provided parameters for the design of a full-scale SSD system.

The estimate of the Site-specific attenuation factor and the projected indoor air TCE concentrations demonstrated that greater potential for COPC intrusion exists in areas where TCE sub-slab soil vapor concentrations are presently greater than 1,000,000 ug/m³. As a result, a full scale SSD system will be designed and installed to mitigate sub-slab concentrations in those areas. However, the system will be designed to facilitate future expansion of the full-scale SSD system, if needed.

4.1 Scope and Objectives

This mitigation plan presents the design and implementation of the full-scale SSD system at the Impress Industries warehouse for mitigating potential sub-slab soil vapor intrusion. The following components are included in this mitigation plan:

- Design of a full-scale SSD system based on the results of the SSD pilot study conducted in July 2007;
- Implementation of the full-scale SSD system to mitigate potential Site-related COPC intrusion to indoor air.

The objectives of the mitigation activities include:

- Design and operation of a full scale SSD system in the areas of high potential for sub-slab soil vapor COPC intrusion in the Impress Industries building;
- Mitigation of the potential sub-slab soil vapor COPC intrusion into the indoor air; and,
- Protection of human health and the environment.

4.2 Conceptual Design of the Full-Scale SSD System

As shown on **Figure 7**, the proposed full-scale SSD system will consist of six extraction points, a vacuum blower, and exhaust treatment equipment (vapor phase activated carbon filtration). The system will be designed and installed with the capacity for future expansion, if needed. Extraction points will be placed at locations with high sub-slab TCE vapor concentrations. Extraction point locations will be adjacent to support columns so as to be unobtrusive and safe from indoor vehicle traffic.

Individual pipes will run from each of the extraction points to a blower located outside of the warehouse building. Horizontal piping will be hung from the existing roof trusses and the vertical piping will be attached to existing walls or columns. Pipes will pass through the exterior building wall and tie into a manifold connected to the blower. Each extraction pipeline will have valves to control air flow as well as instrumentation and sampling points to facilitate monitoring of various operating parameters (pressure, flow, temperature, and vapor concentration).

Components of the SSD system external to the existing structure will be placed in a lockable, enclosed structure located outside of the building along the western building wall. Components in this structure will include the blower, activated carbon filtration unit(s), and control panels. The structure will be fitted with its own electric and phone utility service. The structure will be sized to accommodate future expansion of the system if required.

Blower exhaust will pass through a vapor phase activated carbon filtration unit to remove VOCs. The activated carbon will be replaced on an "as needed" based on scheduled monitoring of the system. Reduced VOC concentrations in the blower exhaust may be observed in the future. Reduced VOC concentrations may preclude the need for carbon filtration. The treated exhaust will be emitted from a stack attached to the outside wall of the warehouse building. The stack outlet will be several feet above the roofline of the warehouse and it will be fitted with a rain cover.

Sampling and measurement points will be installed in the stack near ground level to facilitate monitoring of exhaust quality. Prior to the initial testing phase of system operation, VOC loading rates will be estimated based upon existing site data and initial operating parameters. The loading estimates will then be compared to the criteria listed in the "Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations", issued in May 1988 by the USEPA Office of Air Quality Planning and Standards (OAQPS). This information will be used to design the initial activated carbon filtration unit to assure the compliance with the OAQPS discharge limits.

The SSD system will require minimal attention and maintenance during operation. The system will be equipped with an external fault light to provide a visual indication of system status and an autodialer will be installed to remotely notify identified responsible personnel of any system alarms. Because the core components of the system will be installed outside of the building, there will be little or no need to access the warehouse building during typical system operation, monitoring, and maintenance.

4.3 Implementation, Operation and Monitoring of the Full-Scale SSD System

Following installation, the SSD system will operate in a testing mode for approximately two weeks as required by PADEP remedial system and air permitting requirements. During this period system parameters such as air flow rates, pressure and temperature will be monitored. Additionally, COPC concentrations will be monitored at the inlet and outlet of the carbon filtration unit(s). Calculations of VOC loading will be prepared based on this data and compared to the OAQPS discharge limits.

At the end of the two week test period, ARCADIS will shut down the system and prepare a Request for Determination (RFD) package for submission to the PADEP, including the evaluation of the COPC stack emissions from the system. Once the PADEP has granted the RFD, system operation will be resumed and the system will run continuously except for regularly scheduled maintenance shutdowns.

The long-term SSD system effectiveness and performance will be monitored and evaluated together with the indoor and ambient air quality as described below in Section 5.

5. Indoor and Ambient Air Quality Monitoring Plan

5.1 Objectives of Monitoring Activities

Following the installation of the full-scale SSD system and the activated carbon filtration unit in the Impress Industries building, indoor and ambient air quality samples will be collected at selected locations at the Site and analyzed at a predetermined frequency for the evaluation of the effectiveness and performance of the SSD system. The objectives of the monitoring activities at the Site include:

- Monitoring the effectiveness and efficiency of the full-scale SSD system and the activated carbon filtration unit; and,
- Monitoring the effects of the SSD system on COPC distribution and potential intrusion to indoor air.

5.2 Sampling Locations and Schedule

A monitoring program will be implemented in order to achieve the goals listed above. Indoor air quality monitoring will be conducted at locations described below and listed in **Table 5** and on **Figure 8**. Sampling locations will be consistent with historical sampling locations.

- Impress Industries building: IAQ-101 and IAQ-102 will be located at the same locations as IAQ-1 and IAQ-2 sampled in the July 2007 supplemental soil gas investigation;
- Luciana & Sons area: IAQ-103 will be located at the historical sampling location IAQ-4;

- Hunsinger Plastics area: IAQ-104 will be located at the historical sampling location IA-A-2;
- Stauffer Manufacturing Co., Inc.: IAQ-105 will be located at the historical sampling location IAQ-2;
- Gregory's Woodworking area: IAQ-106 will be located at the historical sampling location IAQ-7 and next to IA-A-4;
- S&W Metals, Inc.: IAQ-107 and IAQ-108 will be located at the historical sampling locations IA-A-5 and IAQ-6, respectively; and,
- Ambient sampling locations: AQUW and AQDW will be located at the same ambient sampling locations sampled in July 2007 as upwind and downwind ambient air sampling locations, respectively.

The indoor and ambient air quality samples will be collected over a period of 8 hours following the SOP in **Appendix A** and will be submitted to an analytical laboratory for gas chromatography/mass spectroscopy (GC/MS) analysis by modified TO-15 for the COPCs listed in **Table 1**. The SSD system discharge point will also be monitored periodically to evaluate mass recovery and carbon efficiency.

*little more
detail
here*

The analytical results will be used to evaluate the effectiveness and performance of the SSD system. The locations and frequency of sampling may be revised based upon the previous sampling results.

5.3 Reporting

Annual monitoring reports will be prepared by AHI and submitted to the USEPA following the start of operation of the full-scale SSD system. Periodic interim updates will also be prepared and submitted to the USEPA throughout the first year of operation. The results of the monthly SSD system performance monitoring and quarterly Site-wide indoor and ambient air quality sampling will be evaluated for the effectiveness and efficiency of the full-scale SSD system for mitigation of the potential sub-slab soil vapor COPC intrusion. A summary addressing the SSD system installation, startup, operation and optimization will be included in the first annual report.

A long-term monitoring plan for the indoor and ambient air quality will also be included in the first annual report and will address the following components:

- Selection of long-term sampling locations for the indoor and ambient air quality and determination of sampling frequency; and,
- Methodology for the complete evaluation of the SSD system in mitigating potential sub-slab soil vapor COPC intrusion.

6. References

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Table 1. Summary of Site Specific COPCs
Former BES Facility, Bally, Pennsylvania

Constituent of Potential Concern (COPC)	CAS No.	Air Toxics Reporting Limits		Shallow Soil Gas Screening Level (USEPA, 2002) (ug/m ³)
		Low-Level Analysis (ug/m ³)	SIM analysis (ug/m ³)	
1,1-Dichloroethane	75-01-4	0.1	0.02	5000
1,1-Dichloroethene	75-34-3	0.1	0.01	2000
cis-1,2-Dichloroethene	75-35-4	0.1	0.02	350
1,1,1-Trichloroethane	156-59-2	0.1	0.02	22,000
Trichloroethene	71-55-6	0.1	0.02	0.22
Vinyl Chloride	79-01-6	0.1	0.01	2.8

Notes:

Laboratory reporting limits may not be achievable under all conditions.

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**Table 2. Summary of Facility Subslab Soil Vapor and Indoor/Ambient Air Results
Former BES Facility Bally, Pennsylvania**

Location	Sample ID	Sample Date	Medium	Trichloroethene	1,1,-Dichloroethene	1,1-Dichloroethane	cis-1,2-Dichloroethene	1,1,1-Trichloroethane	Vinyl chloride
Screening Levels	USEPA Region 3 Ambient Air RBC Residential			0.016	220	510	37	1000	0.072
	PADEP Indoor Air MSC _{IAQ} Nonresidential			48	580	510	100	6,100	9.5
Area 1: Impress Industries	SV-1	4/7/2004	SV	130	500	1.1	0.89	260	<0.23
	SV-4	4/7/2004	SV	6,100	<22	<70	<22	<67	<14
	TG-1	3/23/2005	SV	17,000	34 J	<35	<35	<48	<22
	SV-4B	2/4/2006	SV	210,000	<590	<600	<590	<810	<380
	IAQ-1	2/4/2006	IA	40	3.6	<0.13	<0.13	5.4	<0.041
	SV-9	2/28/2006	SV	11	<0.55	<0.56	<0.55	0.78	<0.36
	SS-A-1	8/30/2006	SV	14000	<34	<35	49	69	<22
	SS-A-1 (dup)	8/30/2006	SV	9300	<26	<27	29	54	<17
	IA-A-1	8/28/2006	IA	180	62	<0.18	0.18	100	<0.056
	IA-A-1-101206	10/12/2006	IA	280	43	<0.65	<0.64	44	<0.41
Area 1: Hunsinger Plastics	IA-A-3-101206	10/12/2006	IA	490	150	<1.2	<1.2	170	<0.75
	SV-10	2/28/2006	SV	490	<4.1	9.0	740	370	<2.6
	SS-A-2	8/30/2006	SV	350	6.0	2.5	200	100	<0.70
Area 1: Luciana & Sons	IA-A-2	8/28/2006	IA	3.8	1.3	<0.13	<0.12	1.6	<0.040
	SV-5	2/28/2006	SV	2,600	580	<6.5	<6.3	22	<4.0
	SV-5Dup	2/28/2006	SV	2,600	590	<6.2	<6.0	23	<3.9
	IAQ-4	2/24/2006	IA	48	7.4	<0.13	<0.13	8.4	<0.041
	SS-A-3	8/30/2006	SV	3000	240	<11	<11	21	<7.0
Area 4: T.G. Packaging	TG-5	3/23/2005	SV	39,000	79,000	<120	<35	<48	<22
	SV-7	2/27/2006	SV	48,000	100,000	<300	<300	51,000	<190
	IAQ-5	2/24/2006	IA	7.7	37	<0.18	<0.18	13	<0.057
	SS-A-5	8/29/2006	SV	47,000	79000	<230	<220	52000	<140
	IA-A-5	8/28/2006	IA	7.4	19	<0.12	<0.12	9.6	<0.038
Area 4: S&W Metals	SV-6	2/27/2006	SV	<0.76	<0.56	<0.57	<0.56	<0.77	<0.36
	IAQ-6	2/24/2006	IA	5.1	53	<0.14	<0.14	19	<0.046
	IAQ-6Dup	2/24/2006	IA	5.2	52	<0.14	<0.14	20	<0.46
	SS-A-6	8/29/2006	SV	3.8	0.84	<0.56	<0.55	5.1	<0.36
	IA-A-6	8/28/2006	IA	1	3.3	<0.13	<0.13	2.3	<0.041
Area 5: Office Area	TG-3	3/24/2005	SV	9.6	<0.063	<0.13	<0.14	0.95	<0.04
	SV-8	2/28/2006	SV	9.1	<0.58	<0.59	<0.58	<0.80	<0.37
	IAQ-3A	2/24/2006	IA (Basement)	2.9	0.065	<0.13	<0.12	0.38	<0.043
	IAQ-3B	2/24/2006	IA (1st Floor)	1.4	<0.067	<0.14	<0.13	0.38	<0.043
	IAQ-3B Dup	2/24/2006	IA (1st Floor)	1.4	0.07	<0.14	<0.13	0.4	<0.043
Former Test Coolers	SV-2	4/7/2004	SV	140	180	2.1	3.6	560	<0.14

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Table 2. Summary of Facility Subslab Soil Vapor and Indoor/Ambient Air Results
Former BES Facility Bally, Pennsylvania

Location	Sample ID	Sample Date	Medium	Trichloroethene	1,1,-Dichloroethene	1,1-Dichloroethane	cis-1,2-Dichloroethene	1,1,1-Trichloroethane	Vinyl chloride
Screening Levels	USEPA Region 3 Ambient Air RBC Residential			0.016	220	510	37	1000	0.072
	PADEP Indoor Air MSC _{IAQ} Nonresidential			48	580	510	100	6,100	9.5
Area 2: Stauffer Mfg. Co	SV-3	4/7/2004	SV	13,000	<53	<54	<53	<73	<34
	TG-2	3/22/2005	SV	290	<0.72	<0.74	<0.72	<1.0	<0.47
	SV-3B	2/28/2006	SV	4,200	<9.5	<9.7	<9.5	<13	<6.1
	IAQ-2	2/24/2006	IA	2.5	0.3	<0.14	<0.13	0.43	<0.043
Area 3: Gregory's Woodworking	SV-11	3/1/2006	SV	110,000	38,000	<300	<290	27,000	<190
	IAQ-7	2/24/2006	IA	0.43	<0.082	<0.17	<0.16	<0.22	<0.053
	IAQ-7DUP	2/24/2006	IA	0.45	<0.082	<0.17	<0.16	<0.22	<0.053
	SS-A-4	8/29/2006	SV	4.6	<0.56	<0.57	<0.56	<0.77	<0.36
	IA-A-4	8/28/2006	IA	0.35	0.07	<0.13	<0.12	0.3	<0.040
Area 3: Great American Weaving Corporation	TG-4	3/22/2005	SV	2.0	<0.071	<0.14	<0.14	0.29	<0.046
Ambient Air Samples	Upwind	2/24/2006	AA	<0.16	<0.06	<0.12	<0.12	<0.16	<0.039
	Downwind	2/24/2006	AA	<0.17	<0.064	<0.13	<0.13	<0.18	<0.041
	AA-East	8/28/2006	AA	0.27	0.12	<0.13	<0.13	0.33	<0.042
	AA-West	8/28/2006	AA	0.19	0.075	<0.13	<0.13	0.27	<0.041

Notes

All results are presented in ug/m³

J - Results are estimated.

SV - Subslab soil vapor

IA - Indoor air

AA - Ambient air

NA - Not available

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Table 3. Summary of 2007 Supplemental Soil Gas Investigation and SSD Pilot Study Results
Former BES Facility, Bally, Pennsylvania

Location	Sample ID	Sample Date	Medium	Trichloroethene	1,1,-Dichloroethene	1,1-Dichloroethane	cis-1,2-Dichloroethene	1,1,1-Trichloroethane	Vinyl chloride
	USEPA Region 3 Ambient Air RBC Residential			0.016	220	510	37	1,000	0.072
	PADEP Indoor Air MSC _{IAQ} Nonresidential			48	580	510	100	6,100	9.5
Sub-Slab	SS-1	7/10/2007	Air	19,000	48	<45	<44	<61	<28
	SS-1 (Lab dup)	7/10/2007	Air	19,000	50	<45	<44	67	<28
	SS-2	7/10/2007	Air	220,000	4,600	<780	<760	3,800	<490
	SS-3	7/11/2007	Air	1,900,000	220,000	<3700	<3700	180,000	<2400
	SS-4	7/11/2007	Air	78,000	95,000	<370	6,600	1,100	<240
	SS-5	7/11/2007	Air	140,000	140,000	<490	<480	4,200	<310
	SS-6	7/11/2007	Air	6,500	4,400	<16	<15	160	<9.9
	SS-7	7/12/2007	Air	180	1,200	<4.6	<4.6	100	<2.9
	SS-8	7/12/2007	Air	21,000	140,000	<420	<410	56,000	<260
	SS-9	7/11/2007	Air	160,000	960,000	<4600	<4600	1,800,000	<2900
	SS-90 (dup)	7/11/2007	Air	25,000	100,000	<580	<570	190,000	<370
	SS-10	7/11/2007	Air	1,600,000	1,500,000	<5200	<5100	1,000,000	<3300
	SS-110 (dup)	7/11/2007	Air	1,100,000	1,400,000	<5000	<4900	890,000	<3200
	SS-11	7/10/2007	Air	4,200,000	25,000	<17000	<16000	50,000	<11000
	SS-12	7/10/2007	Air	1,600,000	<5400	<5500	<5400	<7400	<3500
	SS-13	7/10/2007	Air	1,000,000	3,400	<3100	<3000	<4100	<1900
	SS-14	7/10/2007	Air	3,400	180	<11	<11	120	<7.0
	SS-140 (dup)	7/10/2007	Air	3,200	180	<11	<11	120	<7.0
	SS-15	7/10/2007	Air	55,000	1,000	<120	*<120	980	<76
	SS-16	7/10/2007	Air	740,000	<1800	<1800	<1800	<2500	<1200
	SS-17	7/11/2007	Air	210,000	6,800	<940	<920	13,000	<590
	SS-18	7/11/2007	Air	130,000	120,000	<680	<670	220,000	<430
Indoor Air	IAQ-1	7/16/2007	Air	19	2	<0.41	<0.4	5	<0.13
	IAQ-10 (dup)	7/16/2007	Air	18	3	<0.14	<0.14	5	<0.045
	IAQ-2	7/16/2007	Air	53	23	<0.15	<0.14	62	<0.047
Ambient Air	AQUW	7/16/2007	Air	0.33	<0.12	<0.24	<0.24	<0.32	<0.076
	AQUW-1 (dup)	7/16/2007	Air	0.24	<0.074	<0.15	<0.15	<0.2	<0.048
	AQDW	7/16/2007	Air	0.64	0.36	<0.14	<0.14	0.63	<0.045
Pilot Study	SSD-1	7/13/2007	Air	260,000	<710	<720	<710	<980	<460

Notes

All results are presented in ug/m³

J - Results are estimated.

SV - Subslab soil vapor

IA - Indoor air

AA - Ambient air

NA - Not available

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Table 4. Summary of 2007 SSD Pilot Study Vacuum Influence Results
Former BES Facility, Bally, Pennsylvania

VACUUM INFLUENCE

Project/No.	NP000597.0006.00007	Date	7/13/2007
Personnel	R. McKinney, A. Fuller, P. Jin	Time	7:15 AM
Facility	BES Facility/Warehouse	Weather	Sunny, mid-80's deg F

DESCRIPTION OF SAMPLE LOCATION:

Subslab Extraction Point

Vacuum at Blower (in H ₂ O)	10" @ SSD-1 @ t=0, same @ t=30, same @ t=60, same @ t=90
Air Flow Rate (cfm)	40 @ t=0, same @ t=30, same @ t=60, same @ t=90
Temperature (°F/°C)	76/24.5 @ t=0, same @ t=30, same @ t=60, same @ t=90
Start Time	9:20 AM
End Time	11:30 AM

Monitoring Point Data

<u>Time</u>	<u>SSD Point</u>	<u>Point A</u>	<u>Point B</u>	<u>Point C</u>	<u>Point D</u>	<u>SSD PID</u>	<u>Exhaust PID</u>
(mins lapsed)	(in H ₂ O)	(in H ₂ O)	(in H ₂ O)	(in H ₂ O)	(in H ₂ O)	(in ppm)	(in ppm)
Before Start	0	0.04	0.01	0.01	0.015	23.7	3.5
0	10	0.35	0.255	0.11	0.15	0.0	54.0
10	10	0.40	0.25	0.12	0.15	0.0	46.4
20	10	0.40	0.25	0.12	0.15	0.0	42.3
30	10	0.40	0.25	0.12	0.15	0.0	39.6
40	10	0.35	0.24	0.12	0.15	48.6	39.2
50	10	0.35	0.25	0.13	0.15	52.4	37.6
60	10	0.35	0.25	0.12	0.16	50.4	36.4
70	10	0.35	0.25	0.12	0.15	50.8	35.4
80	10	0.35	0.25	0.12	0.15	51.8	34.9
90	10	0.35	0.25	0.13	0.15	53.2	34.2

Notes:

PID readings before pilot study started (2 L purged each)

Point A @ 8:35 AM: PID = 33.0 ppm

Point B @ 8:15 AM: PID = 30.9 ppm

Point C @ 7:55 AM: PID = 17.6 ppm

Point D @ 8:45 AM: PID = 34.4 ppm

SSD @ 8:25 AM: PID = 23.7 ppm

Exhaust @ 8:05 AM: PID = 3.5 ppm

100% certified canister set up @ SSD-1 @ 10:55 w/ 30 min controller collected @ 11:30

Plugged blowers into outlet by door @ building across alley from warehouse

Some make-up air being added @ 40cfm

Switch to lower range gauge for vacuum measurement @ 40 minutes after start (10:00 AM) for points A&B for more precision

Start using purge pump and Tedlar bag for PID sampling of SSD point @ 40 minutes after start (10:00 AM)

Points A, B, C, D are 5', 10', 30', and 15' (in the middle between SSD point and building wall) from SSD point

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Table 4. Summary of 2007 SSD Pilot Study Vacuum Influence Results
Former BES Facility, Bally, Pennsylvania

VACUUM INFLUENCE

Project/No.	<u>NP000597.0006.00007</u>	Date	<u>7/13/2007</u>
Personnel	<u>R. McKinney, A. Fuller, P. Jin</u>	Time	<u>11:35 AM</u>
Facility	<u>BES Facility/Warehouse</u>	Weather	<u>Sunny, mid-80's deg F</u>

DESCRIPTION OF SAMPLE LOCATION:

Subslab Extraction Point

Vacuum at Blower (in H ₂ O)	<u>3.4" @ SSD-1 @ t=0, same @ t=30</u>
Air Flow Rate (cfm)	<u>20 @ t=0, same @ t=30</u>
Temperature (°F/°C)	<u>76/24.5 @ t=0, same @ t=30</u>
Start Time	<u>11:35 AM</u>
End Time	<u>12:05 PM</u>

Monitoring Point Data

<u>Time</u>	<u>SSD Point</u>	<u>Point A</u>	<u>Point B</u>	<u>Point C</u>	<u>Point D</u>	<u>SSD PID</u>	<u>Exhaust PID</u>
(mins lapsed)	(in H ₂ O)	(in H ₂ O)	(in H ₂ O)	(in H ₂ O)	(in H ₂ O)	(in ppm)	(in ppm)
Before Start	-	-	-	-	-	-	-
0	3.4	0.13	0.08	0.07	0.08	40.2	14.2
10	3.4	0.13	0.08	0.07	0.08	48.0	14.3
20	3.4	0.13	0.08	0.07	0.08	52.6	14.4
30	3.4	0.13	0.08	0.075	0.08	48.9	14.4

Notes:

Flow rate lowered from 40 cfm to 20 cfm @ 11:35 AM

Some make-up air being added @ 20cfm

Start using purge pump and Tedlar bag for PID sampling of SSD point @ 10 minutes after start (11:45 AM)

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Table 4. Summary of 2007 SSD Pilot Study Vacuum Influence Results
Former BES Facility, Bally, Pennsylvania

VACUUM INFLUENCE

Project/No.	NP000597.0006.00007	Date	7/13/2007
Personnel	R. McKinney, A. Fuller, P. Jin	Time	12:05 PM
Facility	BES Facility/Warehouse	Weather	Sunny, mid-80's deg F

DESCRIPTION OF SAMPLE LOCATION:

Subslab Extraction Point

Vacuum at Blower (in H ₂ O)	13" @ SSD-1 @ t=0, same @ t=30
Air Flow Rate (cfm)	45 @ t=0, same @ t=30
Temperature (°F/°C)	76/24.5 @ t=0, same @ t=30
Start Time	12:05 AM
End Time	12:35 AM

Monitoring Point Data

<u>Time</u>	<u>SSD Point</u>	<u>Point A</u>	<u>Point B</u>	<u>Point C</u>	<u>Point D</u>	<u>SSD PID</u>	<u>Exhaust PID</u>
(mins lapsed)	(in H ₂ O)	(in H ₂ O)	(in H ₂ O)	(in H ₂ O)	(in H ₂ O)	(in ppm)	(in ppm)
Before Start	-	-	-	-	-	-	-
0	13.0	0.45	0.30	0.14	0.18	53.5	42.2
10	13.0	0.45	0.30	0.14	0.18	54.1	41.5
20	13.0	0.45	0.30	0.145	0.18	51.8	42.2
30	13.0	0.45	0.30	0.145	0.18	50.2	39.8

Notes:

Flow rate increased from 20 cfm to 45 cfm @ 12:05 PM

Makeup air valve is fully closed

Used purge pump and Tedlar bag for PID sampling of SSD point

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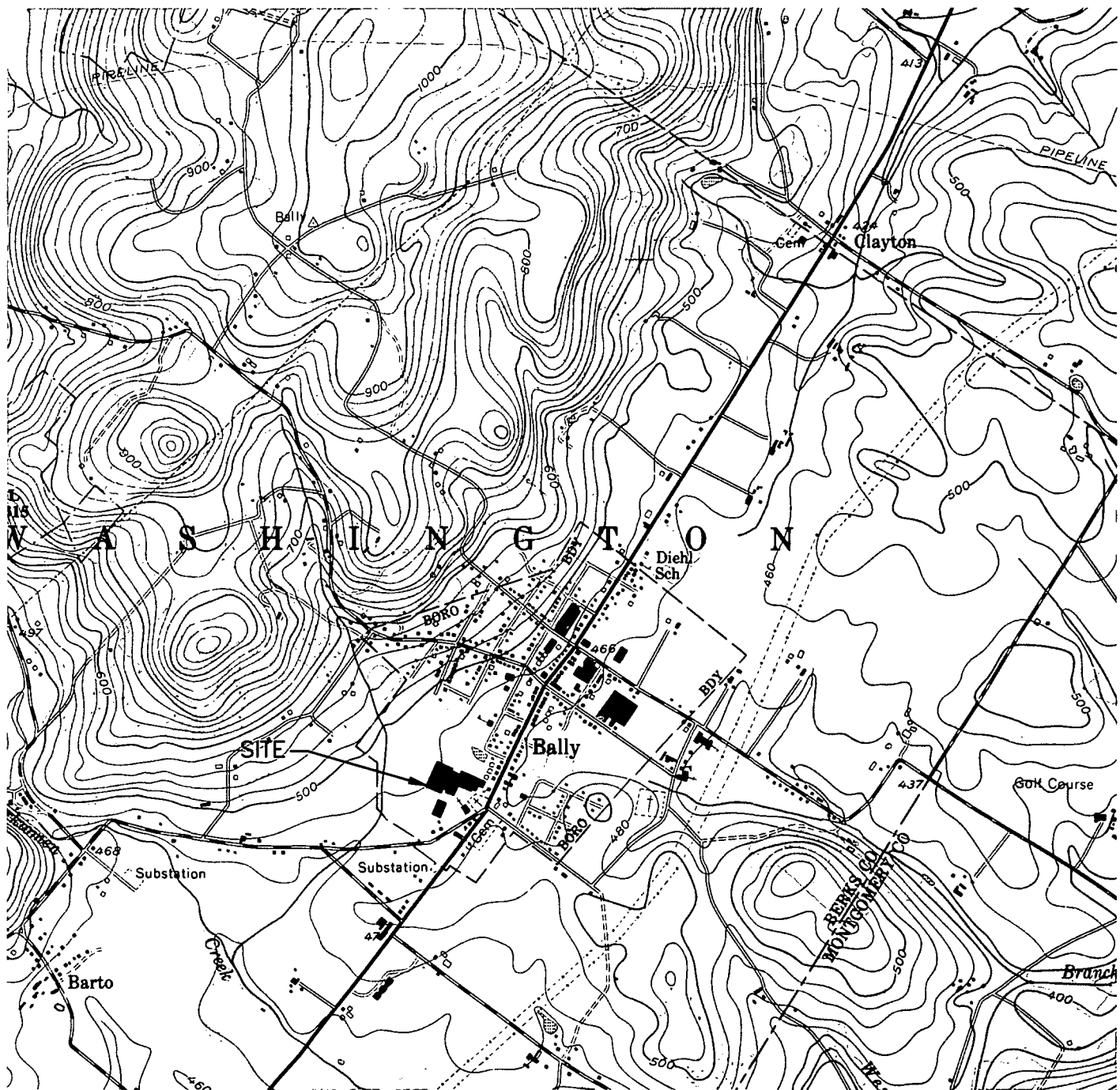
Table 5. Summary of Proposed Facility Indoor Sampling Locations
Former BES Facility, Bally, Pennsylvania

Location	Proposed Sample ID	Historical Sampling ID			Proposed Sampling Schedule (year one)											
		Sample ID	Date	Medium	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Area 1: Impress Industries	IAQ-101	IAQ-1	2/4/2006	IA												
		IAQ-1	7/16/2007	IA	X	X	X	X	X	X			X			X
		IAQ-10 (dup)	7/16/2007	IA												
	IAQ-102	IAQ-2	7/16/2007	IA	X	X	X	X	X	X			X			X
Area 1: Luciana & Sons	IAQ-103	IAQ-4	2/24/2006	IA	X	X	X	X	X	X			X			X
Area 1: Hunsinger Plastics	IAQ-104	IA-A-2	8/28/2006	IA			X			X			X			X
Area 2: Stauffer Mfg. Co	IAQ-105	IAQ-2	2/24/2006	IA			X			X			X			X
Area 3: Gregory's Woodworking	IAQ-106	IAQ-7	2/24/2006	IA												
		IAQ-7DUP	2/24/2006	IA			X			X			X			X
		IA-A-4	8/28/2006	IA												
Area 4: S&W Metals	IAQ-107	IAQ-5	2/24/2006	IA			X			X			X			X
		IA-A-5	8/28/2006	IA												
	IAQ-108	IAQ-6	2/24/2006	IA			X			X			X			X
IAQ-6Dup		2/24/2006	IA													
		IA-A-6	8/28/2006	IA												
Ambient Air Samples	AQUW	Upwind	2/24/2006	AA			X			X			X			X
		AQUW	7/16/2007	AA												
		AQUW-1 (dup)	7/16/2007	AA												
	AQDW	Downwind	2/24/2006	AA			X			X			X			X
		AQDW	7/16/2007	AA												
Annual Reporting															X	

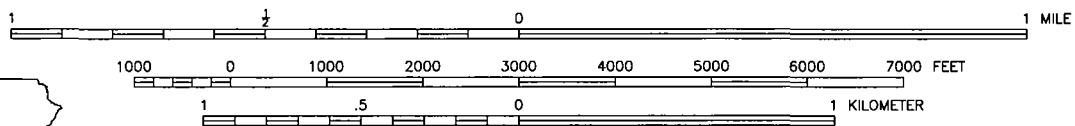
Notes:

IA - Indoor air
AA - Ambient air
DUP - Duplicate

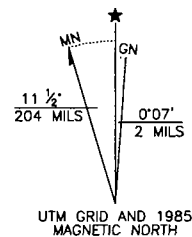
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CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

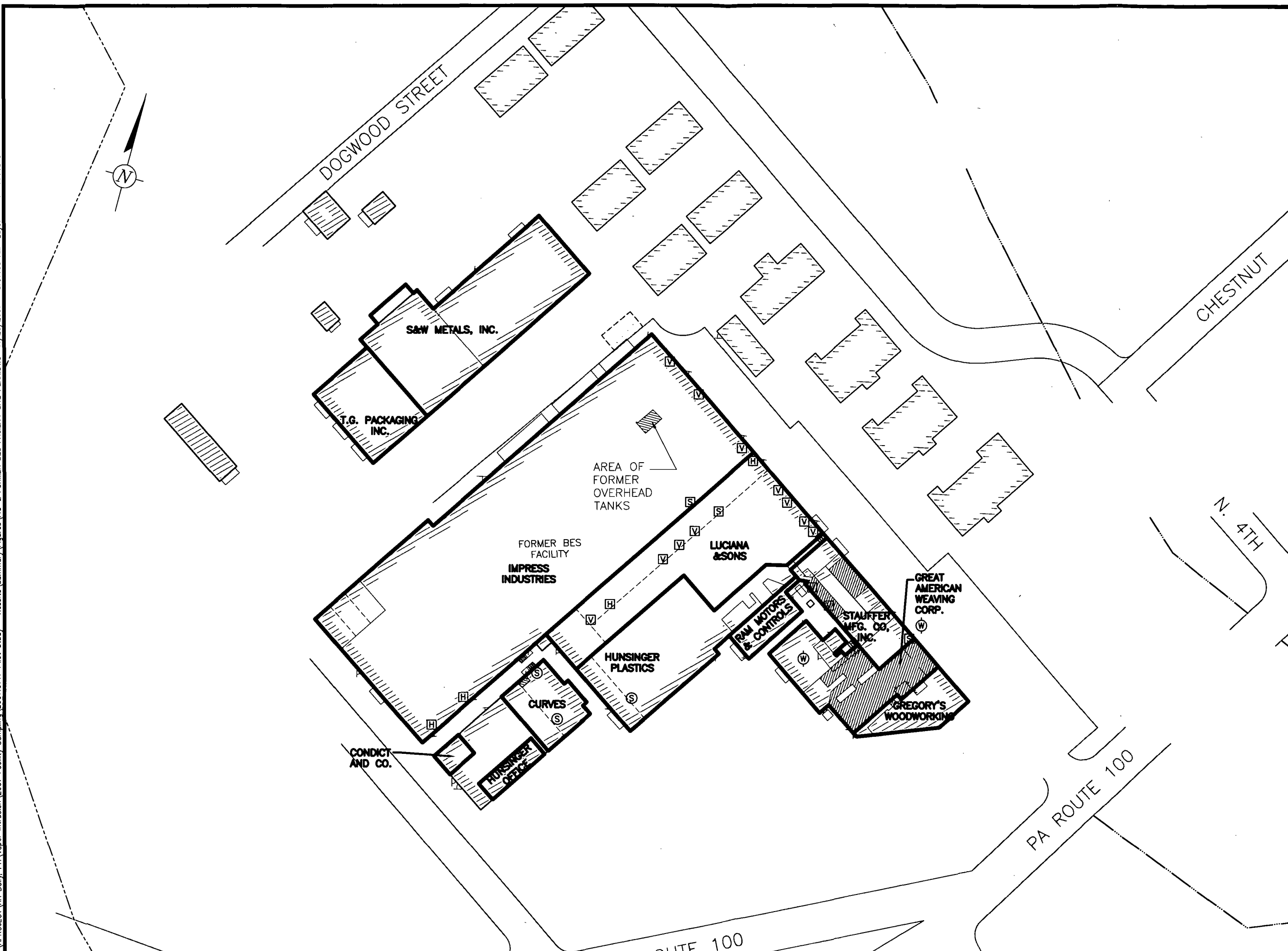


QUADRANGLE LOCATION

SOURCE: USGS 7.5 MIN. TOPOGRAPHICAL QUADRANGLES EAST GREENVILLE, PENNSYLVANIA 1967, PHOTOREVISED 1985.

<p>© 2006 ARCADIS G&M, Inc.</p> <table border="1"><tr><td>Area Manager</td><td>A. ROBINSON</td></tr><tr><td>Project Director</td><td>M. WOLFERT</td></tr><tr><td>Task Manager</td><td>C. SHARPE</td></tr><tr><td>Technical Review</td><td>S. POTTER</td></tr></table>	Area Manager	A. ROBINSON	Project Director	M. WOLFERT	Task Manager	C. SHARPE	Technical Review	S. POTTER	 <p>6 Terry Drive Suite 300 Newtown, Pa 18940 Tel: 267/685-1800 Fax: 267/685-1801 www.arcadis-us.com</p>	<p>AMERICAN HOUSEHOLD, INC. FORMER BALLY ENGINEERED STRUCTURES</p> <h2>SITE LOCATION MAP</h2> <p>BALLY, PA</p>	<table border="1"><tr><td>Project Number</td><td>NP000597.006</td></tr><tr><td>Drawing Date</td><td>2/8/2006</td></tr><tr><td>Figure</td><td>1</td></tr><tr><td></td><td>AR101104</td></tr></table>	Project Number	NP000597.006	Drawing Date	2/8/2006	Figure	1		AR101104
Area Manager	A. ROBINSON																		
Project Director	M. WOLFERT																		
Task Manager	C. SHARPE																		
Technical Review	S. POTTER																		
Project Number	NP000597.006																		
Drawing Date	2/8/2006																		
Figure	1																		
	AR101104																		

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SV-2 4/7/2004	
Trichloroethene	140
1,1-Dichloroethene	180
1,1-Dichloroethane	2.1
cis-1,2-Dichloroethene	3.6
1,1,1-Trichloroethane	560
Vinyl Chloride	< 0.14

SV-1 4/7/2004	
Trichloroethene	130
1,1-Dichloroethene	500
1,1-Dichloroethane	1.1
cis-1,2-Dichloroethene	0.89
1,1,1-Trichloroethane	260
Vinyl Chloride	< 0.23

TG-5 3/23/05	
Trichloroethene	39,000
1,1-Dichloroethene	79,000
1,1-Dichloroethane	<120
cis-1,2-Dichloroethene	<35
1,1,1-Trichloroethane	<48
Vinyl Chloride	<22

TG-3 3/24/05	
Trichloroethene	9.6
1,1-Dichloroethene	<0.063
1,1-Dichloroethane	<0.13
cis-1,2-Dichloroethene	<0.14
1,1,1-Trichloroethane	0.95
Vinyl Chloride	<0.04

TG-1 3/23/05	
Trichloroethene	17,000
1,1-Dichloroethene	34 J
1,1-Dichloroethane	<35
cis-1,2-Dichloroethene	<35
1,1,1-Trichloroethane	<48
Vinyl Chloride	<22

SV-4 4/7/2004	
Trichloroethene	6,100
1,1-Dichloroethene	< 22
1,1-Dichloroethane	< 70
cis-1,2-Dichloroethene	< 22
1,1,1-Trichloroethane	< 67
Vinyl Chloride	< 14

TG-4 3/22/05	
Trichloroethene	2
1,1-Dichloroethene	<0.071
1,1-Dichloroethane	<0.14
cis-1,2-Dichloroethene	<0.14
1,1,1-Trichloroethane	0.29
Vinyl Chloride	<0.046

SV-3 4/7/2004	
Trichloroethene	13,000
1,1-Dichloroethene	< 53
1,1-Dichloroethane	< 54
cis-1,2-Dichloroethene	< 53
1,1,1-Trichloroethane	< 73
Vinyl Chloride	< 34

TG-2 3/22/05	
Trichloroethene	290
1,1-Dichloroethene	<0.72
1,1-Dichloroethane	<0.74
cis-1,2-Dichloroethene	<0.72
1,1,1-Trichloroethane	<1.0
Vinyl Chloride	<0.47

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LEGEND:

- TG-3 PROPOSED TRACER GAS SAMPLE LOCATION
- SV-1 SUBSLAB VAPOR SAMPLE LOCATION (MARCH/APRIL 2004)
- STREAM
- VENT OR VENT FAN
- OVERHEAD HEATING UNIT
- SPRINKLER LINE THROUGH FLOOR
- WATER LINE
- WOOD FLOOR UNDERLAIN BY CONCRETE
- STORM DRAIN
- SUMP

NOTE:

ALL CONCENTRATIONS IN ug/m³

NO.	DATE	REVISION DESCRIPTION	BY
-----	------	----------------------	----

AMERICAN HOUSEHOLD, INC.
BALLY GROUNDWATER SITE
BALLY BOROUGH
BERKS COUNTY, PENNSYLVANIA

FORMER BES FACILITY
SUB-SLAB SAMPLE RESULTS
2004 AND 2005

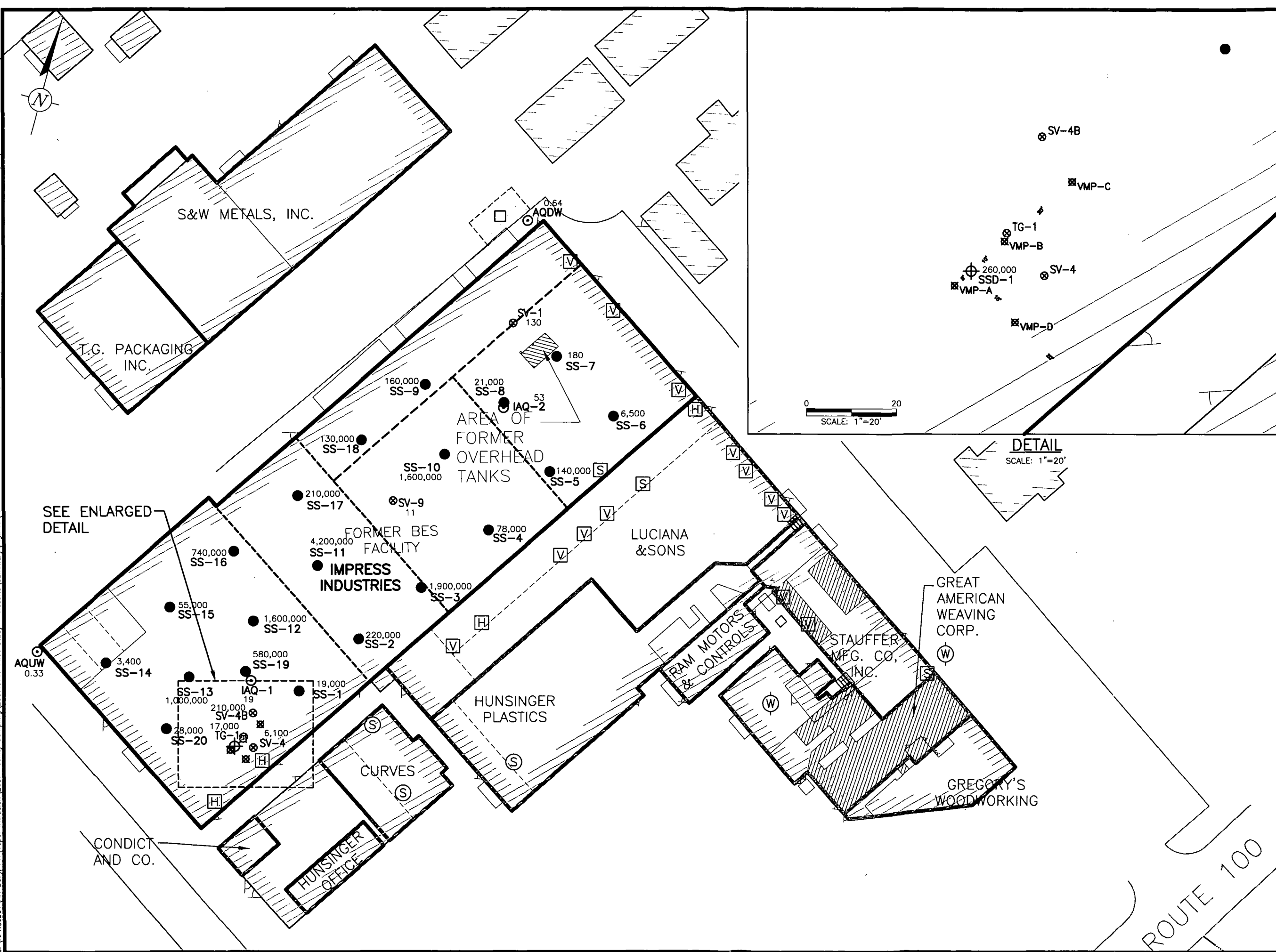


8 Terry Drive
Suite 300, Newtown, Pa 18940
Tel: 287/885-1800 Fax: 287/885-1801

0 120
SCALE: 1"=120'

PROJECT MANAGER M. BEDARD	DEPARTMENT MANAGER M. BEDARD
LEAD DESIGN PROF. F. NATTUS	CHECKED F. NATTUS
DRAWN M. WASILEWSKI	DATE 6/21/05
PROJECT NUMBER NP000597.006	DRAWING NUMBER 101106 3

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LEGEND:

- JULY 2007 INDOOR AIR QUALITY SAMPLING LOCATION
- ⊠ JULY 2007 VACUUM MONITORING POINT
- JULY 2007 SUBSLAB VAPOR SAMPLE LOCATION
- ⊕ JULY 2007 SUB-SLAB DEPRESSUREIZATION POINT
- ⊗ FORMER SUBSLAB VAPOR SAMPLE LOCATION
- STREAM
- V VENT OR VENT FAN
- H OVERHEAD HEATING UNIT
- S SPRINKLER LINE THROUGH FLOOR
- W WATER LINE
- ▨ WOOD FLOOR UNDERLAIN BY CONCRETE
- ▤ STORM DRAIN
- ⊙ SUMP
- - - FOUNDATION
- 140,000 TCE

NOTE:

1. ALL UNITS IN $\mu\text{g}/\text{m}^3$.

AMERICAN HOUSEHOLD, INC.
BALLY GROUNDWATER SITE

BALLY BOROUGH
BERKS COUNTY, PENNSYLVANIA

FORMER BES FACILITY
SUB-SLAB SAMPLING LOCATIONS, PILOT
SYSTEM LAYOUT AND TCE RESULTS
JULY, 2007



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Suite 300, Newtown, Pa 18940
Tel: 287/885-1800 Fax: 287/885-1801











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PROJECT MANAGER M. BEDARD	DEPARTMENT MANAGER M. BEDARD
LEAD DESIGN PROF. F. NATIUS	CHECKED A. FULLER
DRAWN A. FULLER	DATE 8/7/07
PROJECT NUMBER NP000597.006	DRAWING NUMBER 101107 6

G:\PROJECT\AH Bally, PA\Air Intrusion\2007 Facility Sampling\2007.0717 Pilot Study - Results\Summary\Figures\FIG-7 FULL-SCALE SSD SYSTEM LAYOUT AND PIPING AND INSTRUMENTATION DIAGRAM.DWG 11/28/2007 - 9:04:57 AM Layout: FIG 7

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LEGEND:

-  APPROX. LOCATION OF PROPOSED SSD EXTRACTION POINT
-  APPROX. LOCATION OF PROPOSED OVERHEAD SSD EXTRACTION PIPING
-  JULY 2007 INDOOR AIR QUALITY SAMPLING LOCATION
-  JULY 2007 SUBSLAB VAPOR SAMPLE LOCATION
-  FORMER SUBSLAB VAPOR SAMPLE LOCATION
-  VENT OR VENT FAN
-  OVERHEAD HEATING UNIT
-  SPRINKLER LINE THROUGH FLOOR
-  SUMP
-  APPROX. FOUNDATION DELINEATION

NOTES:

1. EXTRACTION POINTS ARE LOCATED ADJACENT TO BUILDING COLUMNS.

AMERICAN HOUSEHOLD, INC.
BALLY GROUNDWATER SITE

BALLY BOROUGH
BERKS COUNTY, PENNSYLVANIA

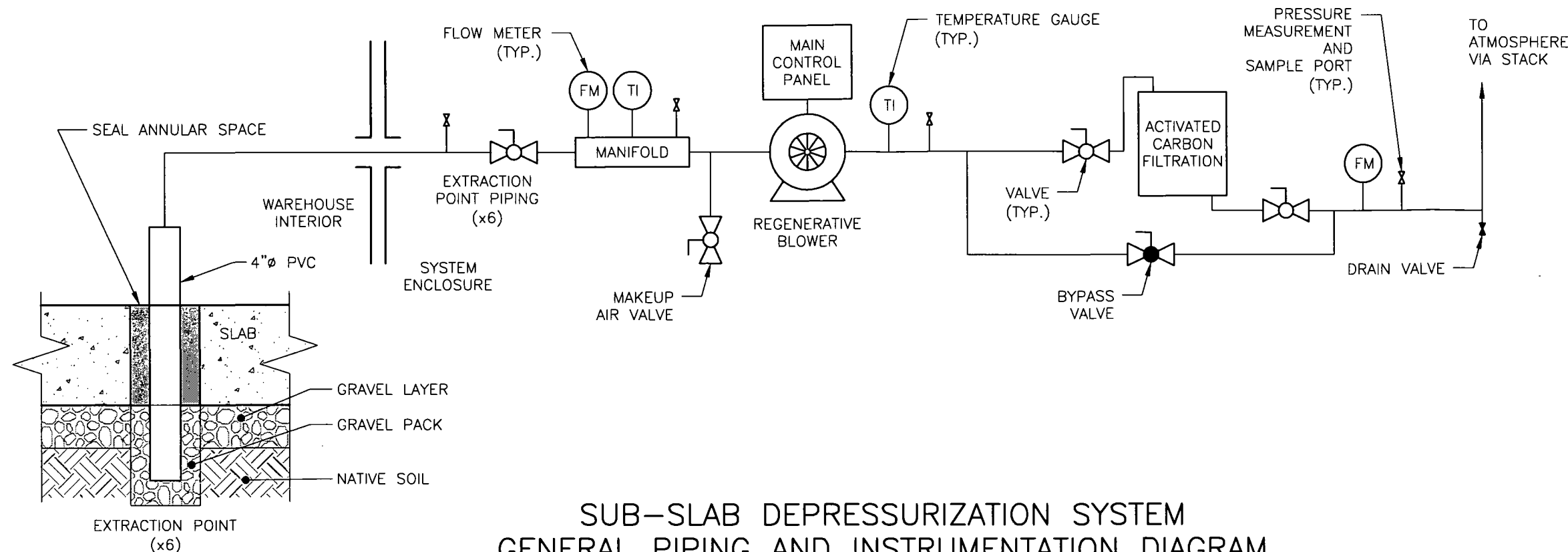
FORMER BES FACILITY
FULL-SCALE SSD SYSTEM
LAYOUT AND PIPING &
INSTRUMENTATION DIAGRAM



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Tel: 267/885-1800 Fax: 267/885-1801

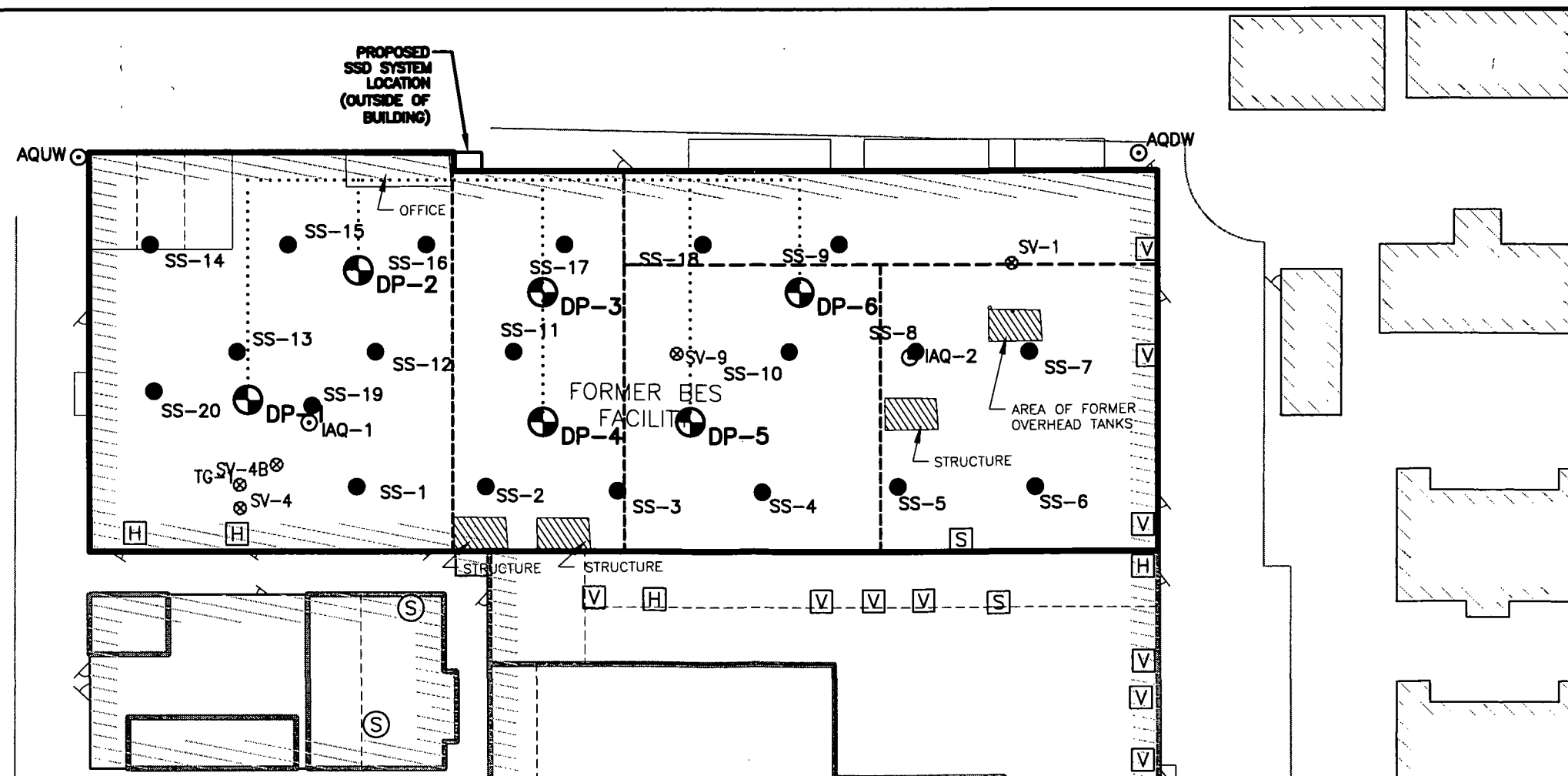
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PROJECT MANAGER M. BEDARD	DEPARTMENT MANAGER M. BEDARD
LEAD DESIGN PROF. F. NATTUS	CHECKED B. KOONS
DRAWN A. FULLER	DATE 9/20/07
PROJECT NUMBER NP000597.0006	DRAWING NUMBER 01108 7

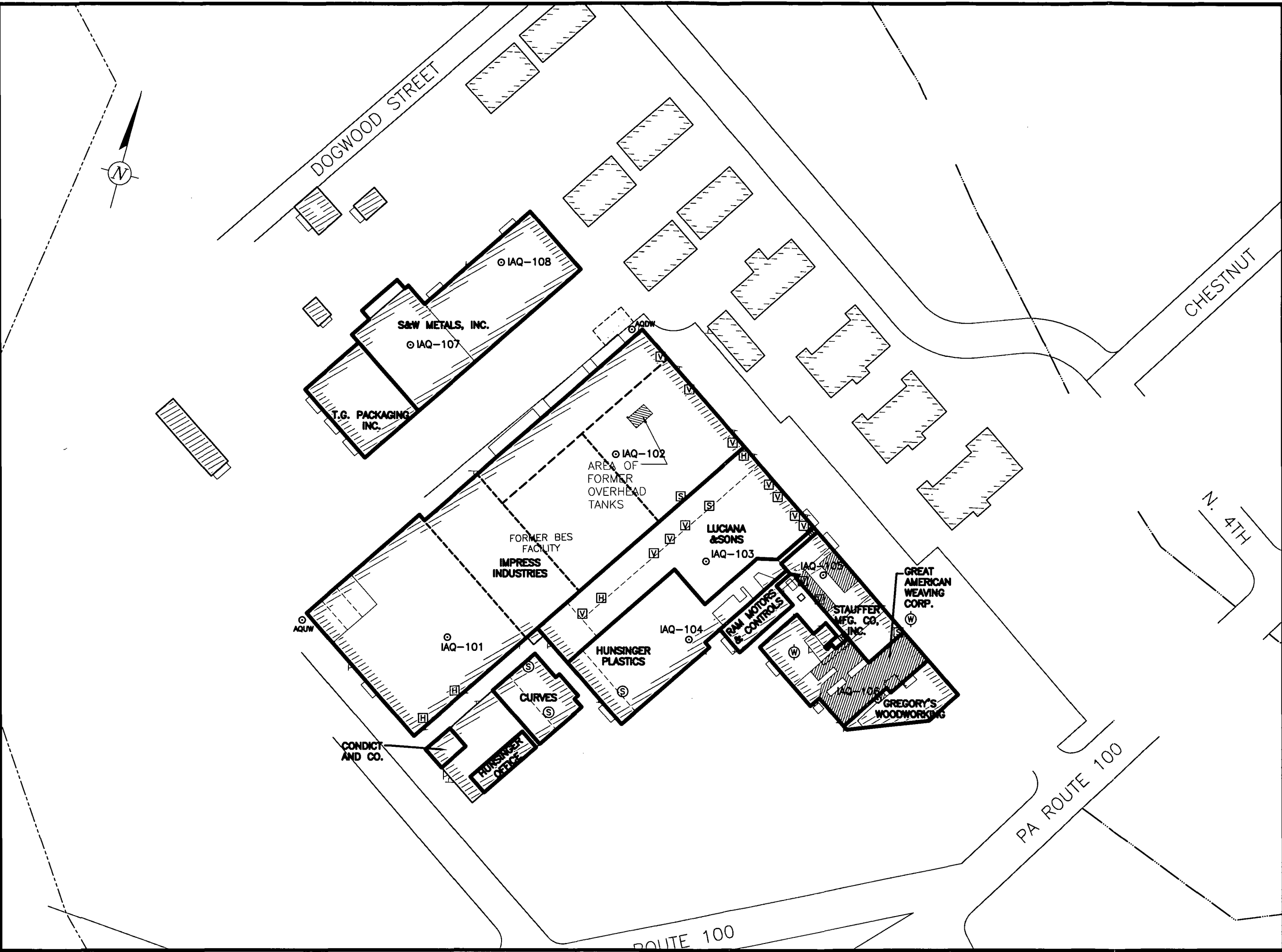


SUB-SLAB DEPRESSURIZATION SYSTEM
GENERAL PIPING AND INSTRUMENTATION DIAGRAM

NOT TO SCALE



G:\PROJECT\AH Bally, PA\Mapor Intrusion\2007 Facility Sampling\2007 0717 Pilot Study - Results\Summary\Figures\Fig-8 INDOOR AND AMBIENT AIR QUALITY MONITORING PLAN SAMPLE LOCATIONS.DWG 11/28/2007 - 9:05:33 AM Layout: New SUBSLAB



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LEGEND:

IAQ-103

PROPOSED INDOOR AND AMBIENT AIR SAMPLING LOCATION

V

STREAM

H

VENT OR VENT FAN

S

OVERHEAD HEATING UNIT

S

SPRINKLER LINE THROUGH FLOOR

W

WATER LINE

WOOD FLOOR UNDERLAIN BY CONCRETE

STORM DRAIN

S

SUMP

NO.	DATE	REVISION	DESCRIPTION	BY
				CKD

AMERICAN HOUSEHOLD, INC.

BALLY GROUNDWATER SITE

BALLY BOROUGH

BERKS COUNTY, PENNSYLVANIA

FORMER BES FACILITY

INDOOR AND AMBIENT AIR

QUALITY MONITORING PLAN

SAMPLING LOCATIONS

ARCADIS

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Suite 300, Newtown, Pa 18940

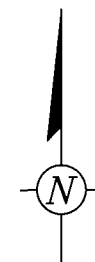
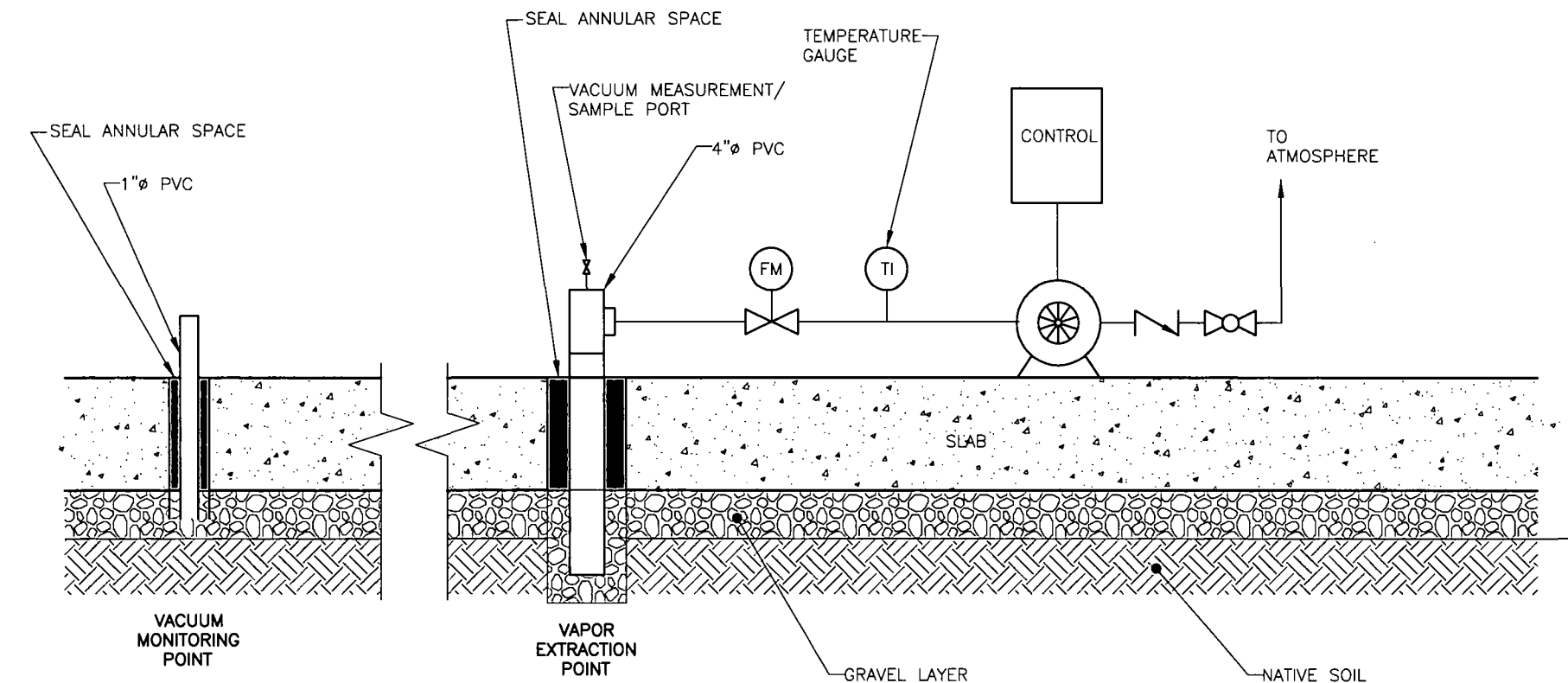
Tel: 267/885-1800 Fax: 267/885-1801

0

120

SCALE: 1"=120'


PROJECT MANAGER	DEPARTMENT MANAGER
M. BEDARD	M. BEDARD
LEAD DESIGN PROF.	CHECKED
F. NATTUS	C. SHARPE
DRAWN	DATE
M. WASILEWSKI	9/14/07
PROJECT NUMBER	DRAWING NUMBER
NP000597.006	101109 8



NOT TO SCALE

USE MAGNEHELICS FOR MONITORING
 VACUUM INFLUENCE AND MONITORING
 POINTS - 0 TO 1" WC, 0 TO 5" WC,
 0 TO 20" WC

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Area Manager R. GAN	 6 Terry Drive Suite 300 Newtown, Pa 18940 Tel: 267/685-1800 Fax: 267/685-1801 www.arcadis-us.com	AMERICAN HOUSEHOLD, INC. FORMER BALLY ENGINEERED STRUCTURES FACILITY	Project Number NP000597.006
Project Director M. WOLFERT		PILOT STUDY SUB-SLAB DEPRESSURIZATION SYSTEM	Drawing Date 6/8/2007
Task Manager P. SHAH			Figure 5
Technical Review P. SHAH			BALLY, PA

ARCADIS

Appendix A

Standard Operating Procedures

STANDARD OPERATING PROCEDURE NO. 1

Chain-of-Custody Procedures

Scope: This procedure describes the Chain-of-Custody used to establish the necessary documentation to track sample possession from time of collection to analysis.

Purpose: The purpose of this procedure is to develop and maintain good quality control in field operations and uniformity between field personnel involved in the documentation of samples for shipment.

Equipment: Chain-of-Custody Record and Chain-of-Custody Seals

Procedure:

Prior to leaving the sampling site and/or prior to sealing sample cartons or coolers for shipment, the Chain-of-Custody Record must be completed.

Information to be provided on this form includes:

1. Project number and Location
2. Laboratory Identification
3. Sampling Party
4. Sample Identification (sample number)
5. Sample Bottle/Container Description
6. Date of Sampling
7. Signature of Persons including Chain-of-Custody and Dates and Times of Possession
8. Delivery Method (attach shipping bill)

Once the container is ready for shipment, Chain-of-Custody Seals shall be applied to the cooler in such a manner as to monitor tampering.

Upon change of possession, the record is to be signed and dated by both parties. The white (original) copy accompanies the shipment, the field sampler retains the yellow copy.

STANDARD OPERATING PROCEDURE NO. 2

Air/Vapor Sample Packaging and Shipment

Scope: This procedure describes acceptable methodology for packaging and shipping air/vapor samples to an analytical laboratory for chemical analyses.

Purpose: The purpose of this procedure is to provide a uniform and documented means of securely transporting environmental samples to the laboratory so as to preserve the integrity and quality of the sample(s).

Equipment: Packaging tape, mailing labels, chain-of-custody forms, chain-of-custody seals, and shipping forms.

Procedures:

1. Assemble all sample containers from the completed sampling event.
2. Locate, identify and record type of canister for each sample identification number on a chain-of-custody form.
3. Determine the total container count and cross check sample count.
4. Check to make sure canisters were labeled properly.
5. Place some shock absorbing material in the bottom of the package to prevent direct contact of the container with the bottom of the package.
6. Arrange canister to prevent movement.
7. Place the top copy of the chain-of-custody in package.
8. Close lid and place custody seals over the joint and cover with clear tape.
9. Properly complete and address a shipping form and affix to the lid of the package. Samples should be delivered to the laboratory by the next morning.
10. Deliver to an appropriate overnight courier or the laboratory.
11. File a copy of the chain-of-custody form and the shipping form in the project file.
12. Call laboratory the next morning to confirm arrival of samples.

STANDARD OPERATING PROCEDURE NO. 3

Subslab Soil Vapor Sampling

Scope: This procedure describes the methodology to be used for the collection of subslab soil vapor samples.

Purpose: The purpose of this procedure is to ensure good quality control in field operations, uniformity between different field personnel and to allow traceability of possible cause of errors in analytical results.

Equipment: Hammer Drill; 3/8 in. bit; tedlar bags; peristaltic pump; 1/4 inch ID Masterflex tubing; concrete sealant; 6-L Summa™ canister; regulator; barometer

Procedure:

Probe Installation

1. Prior to subslab vapor probe installation, identify and mark utilities coming into the building from the outside (e.g., gas, water, sewer, refrigerant, and electrical lines) and utilities beneath (inside) the building.
2. Core hole through cement slab.
3. Drill an approximately 3/8 inch boring approximately 3 inches into subslab soil.
4. Remove the drill and cover the hole with inert material until the probe is ready to be inserted.
5. Install sampling apparatus (i.e., commercially available soil vapor point and tubing) so that it "floats" in the slab avoiding obstruction with subslab material.
6. Seal boring by creating an air-tight seal around sample tubing at ground surface using an inert material.
7. Check sampling apparatus connections. Note that barbed union fittings should be used for tubing connections. If there is a problem with obtaining fittings, the connections may be sealed using an inert material.

Soil Vapor Collection

8. Record location, date, time, weather, atmospheric pressure, approximate depth of subslab vapor samples, on Soil Vapor Sample Log.

9. Connect Tygon sample tubing to ¼ inch ID Masterflex tubing and a peristaltic pump and 1-L Tedlar bag. Use of a peristaltic pump will ensure that sampled air does not circulate through a pump causing potential cross contamination and leakage.
10. Purge vapor probe by filling two Tedlar bags or routing purge air to the exterior of the building with tubing. A purge volume of 2 L was chosen based on the assumption of a 2-inch sampling interval and an affected sample diameter of 0.61 m (2 ft). Purge rate should be approximately 200 cubic centimeters per minute (i.e., 5 minutes per Tedlar bag).
11. Record purge date and time on Soil Vapor Sample Log
12. Collect subslab vapor samples in evacuated 100 percent sim-certified 6-L Summa™ polished canisters equipped with regulators to control intake rate. Sampling rate should be approximately 200 cubic centimeters per minute. Check vacuum in canisters prior to sampling. At least 4-L of air will be collected in the canister for analysis (i.e. 20 minute collection time at 200 cubic centimeters per minute). Following sample collection, check and record final vacuum in canister. Submit canisters to a commercial laboratory for analysis. Record Sample ID, Date, Time and analysis requested on the Sample Label.
13. Record sample time on Soil Vapor Sample Log.
14. Remove sampling apparatus and seal the borehole annulus with an appropriate sealant to the original surface grade (*note duplicate sample collection method below*).

Duplicate Soil Vapor Sample Collection

1. Note duplicate sample location on Soil Vapor Sample Log.
2. Duplicate samples will be collected using duplicate tees and flow restrictors per laboratory guidance Check vacuum in canisters prior to sampling. At least 4-L of air will be collected in the canister for analysis (i.e. 20 minute collection time at 200 cubic centimeters per minute). Following sample collection, check and record final vacuum in canister. Record Duplicate Sample ID, Date, Time and analysis requested on the Sample Label.
3. Submit canisters to a commercial laboratory for analysis.

STANDARD OPERATING PROCEDURE NO. 5

Indoor Air Quality Sampling

Scope: This procedure describes the methodology to be used for the collection of Indoor Air Quality (IAQ) samples.

Purpose: The purpose of this procedure is to ensure good quality control in field operations, uniformity between different field personnel and to allow traceability of possible cause of errors in analytical results.

Equipment: ¼ inch ID Masterflex tubing; 6-L Summa™ canister; regulator/pressure gauge; barometer, IAQ Sample Log, ARCADIS Form IAQ – 01

Procedure:

Indoor Air Quality Sample Collection

Before Sampling

1. Record location, date, time, weather, atmospheric pressure, canister number, flow controller number, on IAQ Sample Log.
2. Verify gauge operation. Gauge on flow controller should read “zero” before use.
3. Verify initial vacuum of canister per laboratory guidance.
 - a. Make sure canister valve is closed.
 - b. Remove brass cap from top of canister.
 - c. Attach gauge/flow controller to canister.
 - d. Attach brass cap to influent side of gauge/flow controller tee fitting.
 - e. Open and close valve quickly.
 - f. Read vacuum on gauge (Initial vacuum of the canister should be greater than 25 in. of Hg. If it is not call AirToxics client services at 1-800-985-5955 and arrange for replacement). Record gauge reading on “Initial Vacuum” section on chain of custody, IAQ Sample log, and on canister tag.

During Sampling

4. Install flow controller, supplied by AirToxics, to top of pressure gauge.

5. Install approximately 3 – 5 ft. tubing to end of flow controller to assure sample is collected at breathing level.
6. Open valve ½ turn.
7. Record time of sample collection start in IAQ Sample log.
8. Check and record gauge pressure in IAQ Sample log after 4 hours of sampling time have elapsed. The sample will be an integrated 8 hour sample. (Note that the flow controllers are set by the laboratory such that some vacuum will remain following the set collection period.)

After Sampling

9. Verify and record final vacuum on IAQ sampling log and on canister tag.
10. Close valve on canister by hand tightening knob.
11. Disassemble pressure gauge and flow controller. Replace brass cap on canister.
12. Complete canister sample tag.
13. Return canisters and sampling apparatus in boxes provided by laboratory.
14. Fill out chain of custody (COC) and place lab. copy of COC in box.
15. Seal box and affix custody seal.
16. Record canister to lab via appropriate shipping method, taking into account canister holding times (14 – 30 days).

Duplicate Indoor Air Quality Sample Collection

1. If a duplicate sample has been collected, note duplicate sample location on IAQ Sample Log.
2. Duplicate samples will be collected using duplicate tees and flow restrictors per laboratory guidance. Check vacuum in canisters prior to sampling. At least 4-L of air will be collected in the canister for analysis. Following sample collection, check and record final vacuum in canister. Record Duplicate Sample ID, Date, Time and analysis requested on the Sample Label.
3. Submit canisters to a commercial laboratory for analysis as described above.

STANDARD OPERATING PROCEDURE NO. 6

SubSlab Depressurization Pilot Test

- Scope:** This procedure describes the methodology to be used for subslab depressurization (SSD) pilot testing.
- Purpose:** The purpose of this procedure is to ensure good quality control in field operations, uniformity between different field personnel, and to allow traceability of possible cause of error in analytical results.
- Equipment:** Core Drill Machine (by others); SSD system; tedlar bags; peristaltic pump; ¼-inch ID Masterflex tubing; non-shrink grout; vacuum gauges; PID; 6-L Summa canister; regulator; barometer.

Procedure:

Vacuum Monitoring Point Installation

1. Prior to vacuum monitoring point (VMP) installation, identify and mark utilities coming into the building from the outside (e.g., gas, water, sewer, refrigerant, and electrical line) and utilities beneath (inside) the building.
2. Core an approximately 3-inch diameter hole for each of the VMP's.
3. Remove the core and approximately 3-inches of subslab soil, and place approximately 2-inches of gravel in the base of the hole.
4. Install a 1-inch diameter schedule 40 PVC pipe at each of the VMPs. Place the base of the pipe directly onto the gravel.
5. Place additional gravel in the annular space around the VMP pipe to raise the gravel level to approximately even with base of concrete.
6. Seal annular space around piping with non-shrink grout in a thickness equivalent to the thickness of the concrete slab. Note that grout should be mixed as a thick paste, as a liquid thin mixture will run into the gravel material and seal off the pore space around the point.
7. Complete VMP apparatus with a 1-inch slip to thread (female NPT) coupling, 1-inch male NPT end-cap, ¼-inch threaded (male NPT) to hose barb stop cock, and polyethylene (PET) tubing.

Solvent weld the coupling onto the 1-inch PVC pipe, and then thread the end-cap into the coupling using Teflon tape to seal. Tap a ¼-inch hole into the end-cap and screw the threaded end of the stopcock into the end-cap. Place the PET tubing on the hose barb. Confirm that stopcock is closed.

Depressurization Point Installation

1. Prior to SSD point installation, identify and mark utilities coming into the building from the outside (e.g., gas, water, sewer, refrigerant, and electrical line) and utilities beneath (inside) the building.
2. Core an approximately 8-inch diameter hole through cement slab for the SSD point.
3. Remove the core and approximately 6-inches of subslab soil, and place approximately 3-inches of gravel in the base of the hole.
4. Install a 4-inch diameter schedule 40 PVC pipe at the SSD point. Place the base of the pipe directly onto the gravel.
5. Place additional gravel in the annular space around the SSD point to raise the gravel level to approximately even with base of the concrete.
6. Seal annular space around piping with non-shrink grout in a thickness equivalent to the thickness of the concrete slab. Note that grout should be mixed as a thick paste, as a liquid thin mixture will run into the gravel material and seal off the pore space around the point.
7. Complete SSD point in accordance with Figure 5 from the Work Plan.

Background Monitoring

Prior to start-up of system, collect a full round of background measurements. The monitoring shall consist of vacuum and PID readings at each of the VMP's, and the sample port on the well head at the SSD point.

1. Record date, weather, and atmospheric pressure on log sheet.
2. Connect Polyethylene tubing to the hose barb on the stop cock, and connect other end of tubing to the vacuum gauge with a range of 0 to 5-inches of water. Make sure that gauge and tubing connections are configured to measure vacuum and not pressure.

3. Open the valve on the stopcock, wait approximately 10 seconds or until reading stabilizes, whichever is longer, and then record the location, vacuum reading, and time on the log sheet. If the vacuum is greater than 5-inches of water, then use an increasingly larger vacuum gauge until a gauge is found with the proper range.
4. Following completion of vacuum measurement, purge vapor probe by filling two 1-liter Tedlar bags or routing purge air to the exterior of the building with tubing. A purge volume of 2 liters was chosen based on the assumption of a 2-inch sampling interval and an affected sample diameter of 0.61 m (2 ft.). Purge rate should be approximately 200 cubic centimeters per minute (i.e., 5 minutes per Tedlar bag).
5. Record the purge date, location, volume purged, and time on the log sheet.
6. Remove the purged air from the Tedlar bag and collect a 1-liter volume sample. Leave the tubing connected to the Tedlar bag and disconnect the opposite end from the hose barb. Using a PID, collect a reading of the sample in the Tedlar bag.
7. Record the location, PID reading, and time on the log sheet.

System Startup and Monitoring

1. Prior to the start-up of the system, confirm that the isolation valves for the SSD point and the make-up air are fully open. Start the blower.
2. Slowly close the make-up valve until the flow rate is approximately 40 SCFM or until make-up valve is completely closed. Note in field book final position of make-up valve (e.g. ~25% closed).
3. Begin monitoring by collecting an initial round of vacuum measurements at each of the VMP's and the sample port on the SSD point well head. Follow steps 2 and 3 from the Background Monitoring section above.
4. Collect a sample from the sample port on the SSD point well head and analyze with a PID. Following the procedures outline in steps 4, 5, 6, and 7 from the Background Monitoring section above.
5. Record the air flow rate and temperature of the discharge effluent.
6. Repeat step 3, 4, and 5 above every 10 minutes for the first hour and every 1 hour thereafter until the end of the test.

Effluent Air Sampling

Prior to completion of the pilot test, an air sample will be collected from the sample port located on the well head of the SSD point utilizing the following procedure. The system shall remain running during this test.

1. Purge vapor probe by filling a single 1-liter Tedlar bag or routing purge air to the exterior of the building with tubing. A purge volume of 1 liter was chosen as sufficient to purge the headspace below the cap on the well head tee. Purge rate should be approximately 200 cubic centimeters per minute (i.e., 5 minutes per Tedlar bag).
2. Record the purge date, location, volume purged, and time on the log sheet.
3. Collect vapor sample in evacuated 100 percent sim-certified 6-liter Summa canister equipped with a regulator to control intake rate. Sampling rate should be approximately 200 cubic centimeters per minute. Check vacuum in canisters prior to sampling. At least 4 liters of air will be collected in the canister for analysis (i.e. 20 minute collection time at 200 cubic centimeters per minute). Following sample collection, check and record final vacuum in canister. Submit canister to a commercial laboratory for analysis. Record sample ID, date, time, and analysis requested on the sample label.

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Appendix B

Sample Logs



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SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-1-071007</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7-10-07</u>	Sampling Personnel	<u>RDM, SS, FS</u>
Time	<u>0925</u>	Duplicate ID	<u>n/a</u>
Weather	<u>148, 90;</u>	Barometric Pressure	<u>n/a</u>
		I.Vac.	<u>29.2</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>SS-1</u>	Cannister Type	<u>Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>34306</u>
Floor Type	<u>Concrete</u>	Flow Regulator No.	<u>34306</u>
Cracks?	<u>no, seam ~4' away</u>	Pre Sample Vacuum	<u>29.2</u>
Room Dimensions		Sample Depth (ft)	<u>~6"</u>
Tie Meas. 1		Purge Time	<u>0913-0924</u>
Tie Meas. 2		Purge Rate	<u>200 mL/min</u>
Tie Meas. 3		Purge Volume	<u>~2 L</u>
		Begin Sample Time	<u>0925</u>
		End Sample Time	<u>1101</u>
		End Sample Vacuum	<u><1</u>

FIELD PARAMETERS:

Sample Method	<u>Summa 6L</u>	<u>TO-15</u>
Sample Description	<u>Sub Slab Vapor</u>	

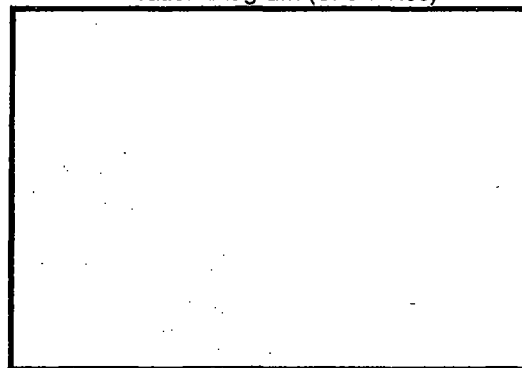
PID	<u>2.6</u>
FID	<u>—</u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

TOTAL: 1

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-2-071007</u>	Project/No.	<u>NP000597.0006</u>
Date	<u>7.10.07</u>	Sampling Personnel	<u>ROM</u>
Time	<u>1400</u>	Duplicate ID	<u>n/a</u>
Weather	<u>hazy, humid 90s</u>	Barometric Pressure	<u>n/a</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>SS-2</u>	Cannister Type	<u>6L Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>34460</u>
Floor Type	<u>Concrete</u>	Flow Regulator No.	<u>FC00329</u>
Cracks?	<u>seam ~27"</u>	Pre Sample Vacuum	<u>-27.2"Hg</u>
Room Dimensions		Sample Depth (ft)	<u>6"</u>
Tie Meas. 1		Purge Time	<u>1350</u>
Tie Meas. 2		Purge Rate	<u>200 mL/min</u>
Tie Meas. 3		Purge Volume	<u>~2L</u>
		Begin Sample Time	<u>1400</u>
		End Sample Time	<u>1505</u>
		End Sample Vacuum	<u>0</u>

FIELD PARAMETERS:

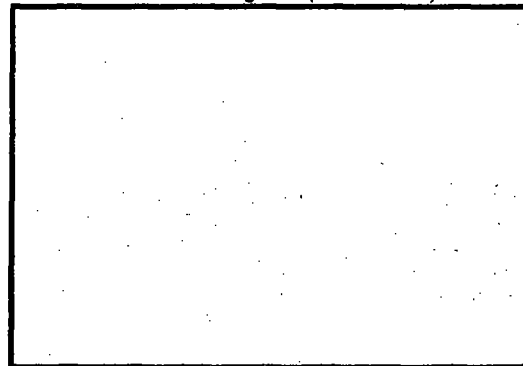
Sample Method	<u>TO-15</u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>13</u>
FID	<u>-</u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>

TOTAL: 1

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID SS-3-071107
Date 7-11-07
Time 0956
Weather Hot, 90's

Project/No.	NP000597.0006.
Sampling Personnel	FS, SS
Duplicate ID	<u> </u>
Barometric Pressure	

DESCRIPTION OF SAMPLE LOCATION:

Location	
Facility	Former BES
Floor Type	
Cracks?	
Room Dimensions	
Tie Meas. 1	
Tie Meas. 2	
Tie Meas. 3	

Cannister Type	Summa
Cannister No.	34315
Flow Regulator No.	34315
Pre Sample Vacuum	27.5
Sample Depth (ft)	6"
Purge Time	10 min
Purge Rate	200 ml pm
Purge Volume	2 L
Begin Sample Time	0956
End Sample Time	1110
End Sample Vacuum	0 -

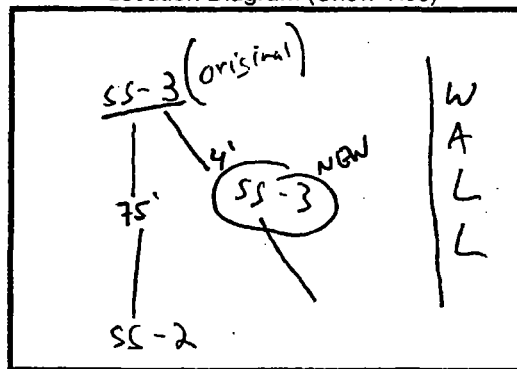
FIELD PARAMETERS:

Sample Method _____
Sample Description Sub Slab Vapor
PID 206 ppm NOTE: offset approx 4'
FID _____

NOTE: Offset approx 4' due to refusal at original mark out
- 4 feet closer to SS. 2

CONTAINER DESCRIPTION:[illegible]

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-4-071107</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7-11-07</u>	Sampling Personnel	<u>FS, JS</u>
Time	<u>1149</u>	Duplicate ID	<u> </u>
Weather	<u>Hot 90°</u>	Barometric Pressure	<u> </u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u> </u>	Cannister Type	<u>Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>34367</u>
Floor Type	<u> </u>	Flow Regulator No.	<u>34367</u>
Cracks?	<u> </u>	Pre Sample Vacuum	<u>28.5</u>
Room Dimensions	<u> </u>	Sample Depth (ft)	<u>7"</u>
Tie Meas. 1	<u> </u>	Purge Time	<u>10 min</u>
Tie Meas. 2	<u> </u>	Purge Rate	<u>200 mL/min</u>
Tie Meas. 3	<u> </u>	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1149</u>
		End Sample Time	<u>1300</u>
		End Sample Vacuum	<u>0</u>

FIELD PARAMETERS:

Sample Method	<u> </u>
Sample Description	<u>Sub Slab Vapor</u>

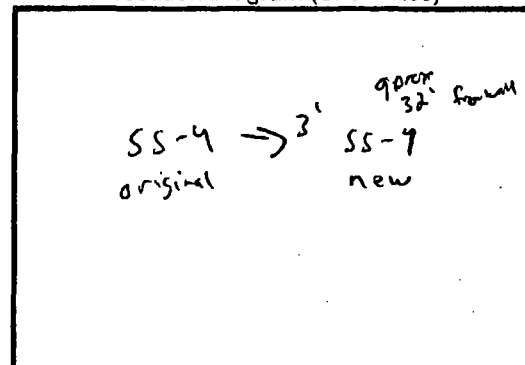
PID	<u>69 ppm</u>
FID	<u> </u>

NOTE* SS4 off set approx 3' closer to wall due to pallets

CONTAINER DESCRIPTION:

Container	Analysis
6L Summa	TO-15
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
TOTAL:	<u> </u>

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-5-071107</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7-11-07</u>	Sampling Personnel	<u>ES, PJ</u>
Time	<u>1405</u>	Duplicate ID	<u> </u>
Weather	<u>1st 90's</u>	Barometric Pressure	<u> </u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u> </u>	Cannister Type	<u>Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>436</u>
Floor Type	<u> </u>	Flow Regulator No.	<u>436</u>
Cracks?	<u> </u>	Pre Sample Vacuum	<u>28.5</u>
Room Dimensions	<u> </u>	Sample Depth (ft)	<u>7'</u>
Tie Meas. 1	<u> </u>	Purge Time	<u>10 min</u>
Tie Meas. 2	<u> </u>	Purge Rate	<u>200 ml/min</u>
Tie Meas. 3	<u> </u>	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1405</u>
		End Sample Time	<u>1450</u>
		End Sample Vacuum	<u>0</u>

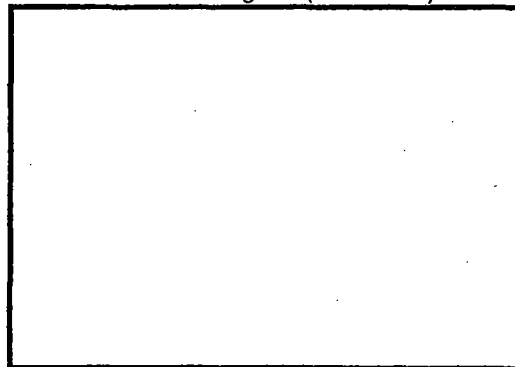
FIELD PARAMETERS:

Sample Method	<u> </u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>68 ppm</u>
FID	<u> </u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
TOTAL:	<u> </u>

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-6-071107</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7-11-07</u>	Sampling Personnel	<u>FS, PJ</u>
Time	<u>1526</u>	Duplicate ID	<u> </u>
Weather	<u>Hot, 90's</u>	Barometric Pressure	<u> </u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u> </u>	Cannister Type	<u>Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>14015</u>
Floor Type	<u> </u>	Flow Regulator No.	<u>14015</u>
Cracks?	<u> </u>	Pre Sample Vacuum	<u>28</u>
Room Dimensions	<u> </u>	Sample Depth (ft)	<u>7"</u>
Tie Meas. 1	<u> </u>	Purge Time	<u>10m</u>
Tie Meas. 2	<u> </u>	Purge Rate	<u>200 ml pm</u>
Tie Meas. 3	<u> </u>	Purge Volume	<u>2L</u>

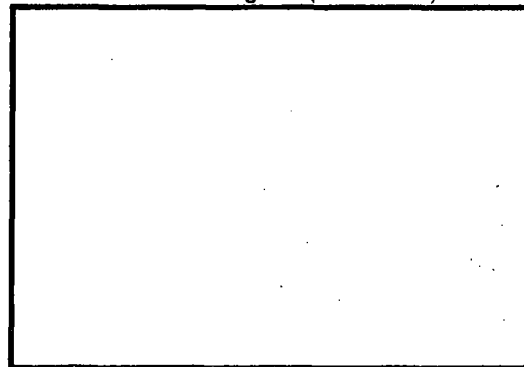
FIELD PARAMETERS:

Sample Method	<u> </u>	Begin Sample Time	<u>1526</u>
Sample Description	<u>Sub Slab Vapor</u>	End Sample Time	<u>1609</u>
	<u> </u>	End Sample Vacuum	<u>0</u>
PID	<u>28 ppm</u>		
FID	<u> </u>		

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
TOTAL:	<u> </u>

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-7-071207</u>	Project/No.	<u>NP000597.0006</u>
Date	<u>7.12.07</u>	Sampling Personnel	<u>ROM-PJ</u>
Time	<u>0933</u>	Duplicate ID	<u>N/A</u>
Weather	<u>clear, 80s</u>	Barometric Pressure	<u>N/A</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>SS-7</u>	Cannister Type	<u>6L Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>34407</u>
Floor Type	<u>concrete</u>	Flow Regulator No.	<u>FC00911</u>
Cracks?	<u>crack ~2' away</u>	Pre Sample Vacuum	<u>-28.4" Hg.</u>
Room Dimensions		Sample Depth (ft)	<u>6"</u>
Tie Meas.1		Purge Time	<u>0922-0933</u>
Tie Meas. 2		Purge Rate	<u>200 mL/min</u>
Tie Meas. 3		Purge Volume	<u>~2L</u>
		Begin Sample Time	<u>0933</u>
		End Sample Time	<u>1012</u>
		End Sample Vacuum	<u>Ø</u>

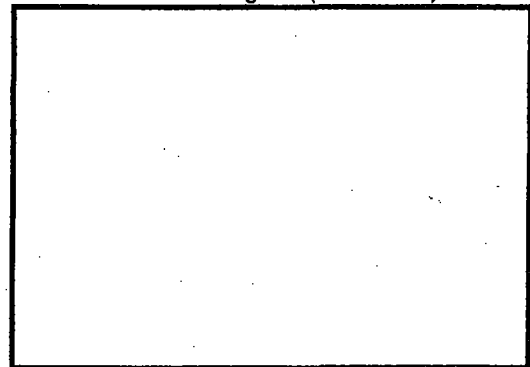
FIELD PARAMETERS:

Sample Method	<u>TO-15</u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>13.6</u>
FID	<u>—</u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
TOTAL:	<u>1</u>

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-8-071207</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7.12.07</u>	Sampling Personnel	<u>ROM</u>
Time	<u>1027</u>	Duplicate ID	<u>n/a</u>
Weather	<u>clear, 80s</u>	Barometric Pressure	<u>n/a</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>SS-8</u>	Cannister Type	<u>6L</u>
Facility	<u>Former BES</u>	Cannister No.	<u>22513</u>
Floor Type	<u>Concrete</u>	Flow Regulator No.	<u>FC00091</u>
Cracks?	<u>seam 3' away</u>	Pre Sample Vacuum	<u>28.4"</u>
Room Dimensions		Sample Depth (ft)	<u>7"</u>
Tie Meas. 1		Purge Time	<u>1017 20 - 1027</u>
Tie Meas. 2		Purge Rate	<u>200 mL/min</u>
Tie Meas. 3		Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1027</u>
		End Sample Time	<u>1110</u>
		End Sample Vacuum	<u>Ø</u>

FIELD PARAMETERS:

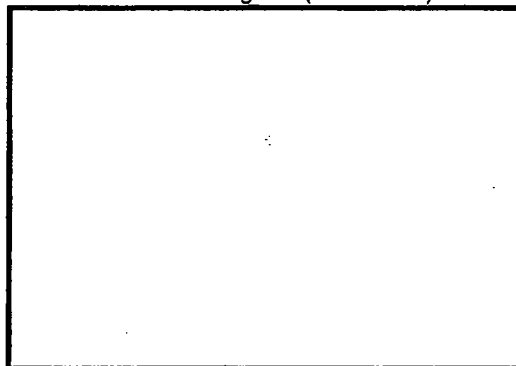
Sample Method	<u>TO-15</u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>42.0</u>
FID	<u>-</u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

TOTAL: 1

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID SS-39-071107
 Date 7/4/07
 Time 1400
 Weather _____

Project/No. NP000597.0006.
 Sampling Personnel J. J. J. J.
 Duplicate ID SS-39-071107
 Barometric Pressure _____

DESCRIPTION OF SAMPLE LOCATION:

Location _____
 Facility Former BES
 Floor Type Concrete
 Cracks? _____
 Room Dimensions _____
 Tie Meas. 1 _____
 Tie Meas. 2 _____
 Tie Meas. 3 _____

Cannister Type _____
 Cannister No. 05404 / 02243
 Flow Regulator No. 05404 / 02243
 Pre Sample Vacuum 28.0 / 28.5
 Sample Depth (ft) 6.5"
 Purge Time 10-15
 Purge Rate 20.72/min
 Purge Volume 2L
 Begin Sample Time 1400
 End Sample Time 1500
 End Sample Vacuum 21.0 / 21.1

FIELD PARAMETERS:

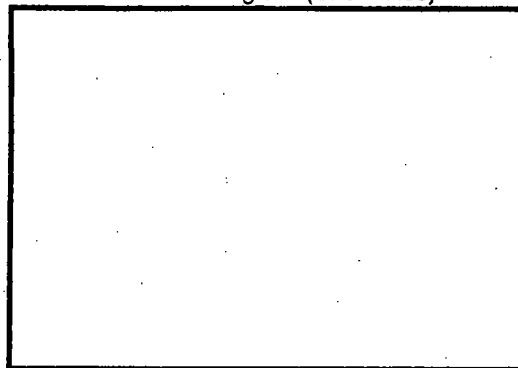
Sample Method _____
 Sample Description Sub Slab Vapor
 PID avg: 75.4 ppm
 FID _____

CONTAINER DESCRIPTION:

Container	Analysis
6L Summa	TO-15
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

TOTAL:

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-10-071107</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/11/07</u>	Sampling Personnel	<u>JS</u>
Time	<u>1545</u>	Duplicate ID	<u>SS-10-071117</u>
Weather	<u>Sunny 91°</u>	Barometric Pressure	<u></u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u></u>	Cannister Type	<u></u>
Facility	<u>Former BES</u>	Cannister No.	<u>33540 / 34247</u>
Floor Type	<u>concrete</u>	Flow Regulator No.	<u>33540 / 34241</u>
Cracks?	<u></u>	Pre Sample Vacuum	<u>28.2 / 27.0</u>
Room Dimensions	<u></u>	Sample Depth (ft)	<u>6.0"</u>
Tie Meas. 1	<u></u>	Purge Time	<u>10 min</u>
Tie Meas. 2	<u></u>	Purge Rate	<u>20. ml/min</u>
Tie Meas. 3	<u></u>	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1545</u>
		End Sample Time	<u>1600</u>
		End Sample Vacuum	<u>21.0 / 21.2</u>

FIELD PARAMETERS:

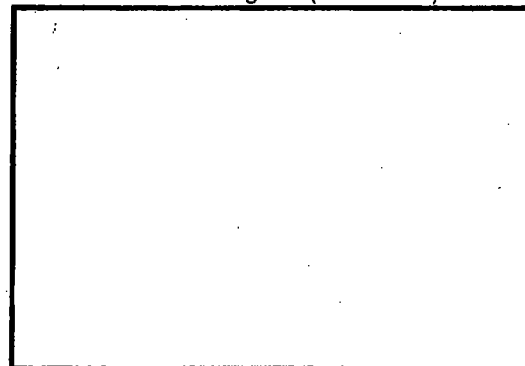
Sample Method	<u></u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>Aug 91 : 332 ppm Aug #2 = 251 ppm</u>
FID	<u></u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>

TOTAL:

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-11-071007</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7.10.07</u>	Sampling Personnel	<u>FS</u>
Time	<u>1411</u>	Duplicate ID	<u>—</u>
Weather	<u>Hazy, 90's</u>	Barometric Pressure	<u> </u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u> </u>	Cannister Type	<u>Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>35190</u>
Floor Type	<u> </u>	Flow Regulator No.	<u>35190</u>
Cracks?	<u> </u>	Pre Sample Vacuum	<u>30+</u>
Room Dimensions	<u> </u>	Sample Depth (ft)	<u>7"</u>
Tie Meas. 1	<u> </u>	Purge Time	<u>10</u>
Tie Meas. 2	<u> </u>	Purge Rate	<u>200ml/m</u>
Tie Meas. 3	<u> </u>	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1411</u>
		End Sample Time	<u>1500*</u>
		End Sample Vacuum	<u>2.5</u>

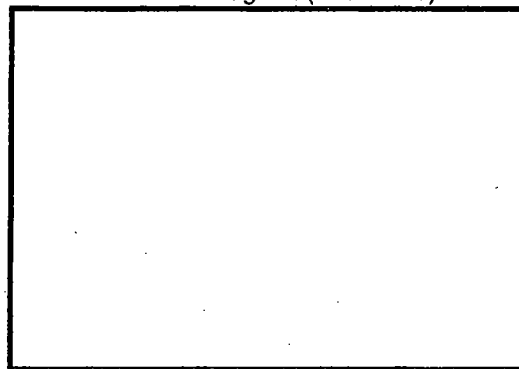
FIELD PARAMETERS:

Sample Method	<u> </u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>650 ppm</u>
FID	<u> </u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
TOTAL:	<u> </u>

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-12-071007</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7.10.07</u>	Sampling Personnel	<u>FS</u>
Time	<u>1130</u>	Duplicate ID	<u>—</u>
Weather	<u>Hot, 90's</u>	Barometric Pressure	<u> </u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u> </u>	Cannister Type	<u>Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>4212</u>
Floor Type	<u>concrete</u>	Flow Regulator No.	<u>4212</u>
Cracks?	<u>no</u>	Pre Sample Vacuum	<u>29.5</u>
Room Dimensions	<u> </u>	Sample Depth (ft)	<u>7"</u>
Tie Meas.1	<u> </u>	Purge Time	<u>10 min</u>
Tie Meas. 2	<u> </u>	Purge Rate	<u>200-1 pm</u>
Tie Meas. 3	<u> </u>	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1148 *</u>
		End Sample Time	<u>1311</u>
		End Sample Vacuum	<u>○</u>

FIELD PARAMETERS:

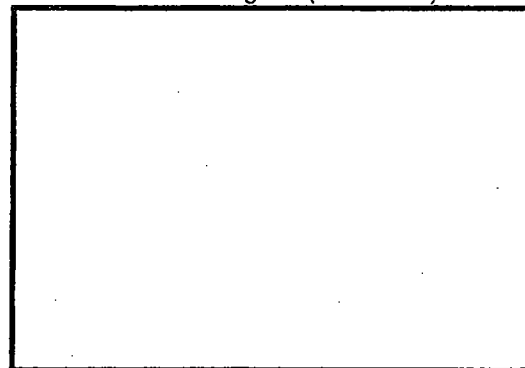
Sample Method	<u> </u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>360 ppm</u>
FID	<u> </u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

TOTAL:

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-13-071007</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/10/07</u>	Sampling Personnel	<u>JS</u>
Time	<u>1035</u>	Duplicate ID	_____
Weather	<u>Sunny 90's</u>	Barometric Pressure	_____

DESCRIPTION OF SAMPLE LOCATION:

Location	_____	Cannister Type	_____
Facility	<u>Former BES</u>	Cannister No.	<u>14874</u>
Floor Type	<u>concrete</u>	Flow Regulator No.	<u>14874</u>
Cracks?	_____	Pre Sample Vacuum	<u>27.2</u>
Room Dimensions	_____	Sample Depth (ft)	<u>6.5"</u>
Tie Meas. 1	_____	Purge Time	<u>10 min</u>
Tie Meas. 2	_____	Purge Rate	<u>200 ml/min</u>
Tie Meas. 3	_____	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1045</u>
		End Sample Time	<u>1134</u>
		End Sample Vacuum	<u>24.2 2.4</u>

FIELD PARAMETERS:

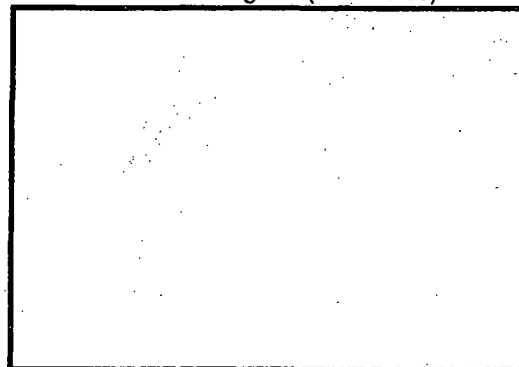
Sample Method	_____
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>bag #1 = 84.3 ppm bag #2 = 20.3 ppm</u>
FID	_____

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

TOTAL:

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-14-071007</u>	Project/No.	<u>NP000597.0006</u>
Date	<u>7.10.07</u>	Sampling Personnel	<u>ROM</u>
Time	<u>1150</u>	Duplicate ID	<u>SS-140-071007</u>
Weather	<u>hazy, humid 90s</u>	Barometric Pressure	<u>n/a</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>SS-14 Bally</u>	Cannister Type	<u>6L Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>33886 & 34355</u>
Floor Type	<u>concrete</u>	Flow Regulator No.	<u>" "</u>
Cracks?	<u>Scam - 12" crack - 8'</u>	Pre Sample Vacuum	<u>29.5 29.6</u>
Room Dimensions	<u>1st gate - 4'</u>	Sample Depth (ft)	<u>~9.5"</u>
Tie Meas. 1		Purge Time	<u>1140 - 1150</u>
Tie Meas. 2		Purge Rate	<u>200ml/min</u>
Tie Meas. 3		Purge Volume	<u>~2L</u>
		Begin Sample Time	<u>1140 1150</u>
		End Sample Time	<u>1315</u>
		End Sample Vacuum	<u>Ø Ø</u>

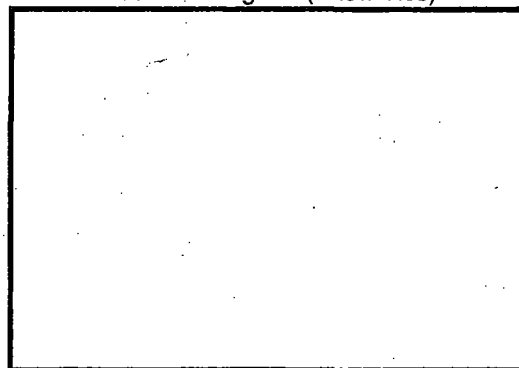
FIELD PARAMETERS:

Sample Method	<u>TO-15</u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>3.7</u>
FID	<u>—</u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
TOTAL:	<u>2</u>

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>CS-15-071007</u>	Project/No.	<u>NP000597.0006</u>
Date	<u>7/10/07</u>	Sampling Personnel	<u>JSL/for</u>
Time	<u>1400</u>	Duplicate ID	_____
Weather	<u>Sunny 98°</u>	Barometric Pressure	_____

DESCRIPTION OF SAMPLE LOCATION:

Location	_____	Cannister Type	_____
Facility	<u>Former BES</u>	Cannister No.	<u>34034 24224</u>
Floor Type	<u>Concrete</u>	Flow Regulator No.	<u>34034 24224</u>
Cracks?	_____	Pre Sample Vacuum	<u>27.3</u>
Room Dimensions	_____	Sample Depth (ft)	<u>6.4"</u>
Tie Meas. 1	_____	Purge Time	<u>10 min</u>
Tie Meas. 2	_____	Purge Rate	<u>200 mL/min</u>
Tie Meas. 3	_____	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1415 1430</u>
		End Sample Time	<u>1512</u>
		End Sample Vacuum	<u>5.5</u>

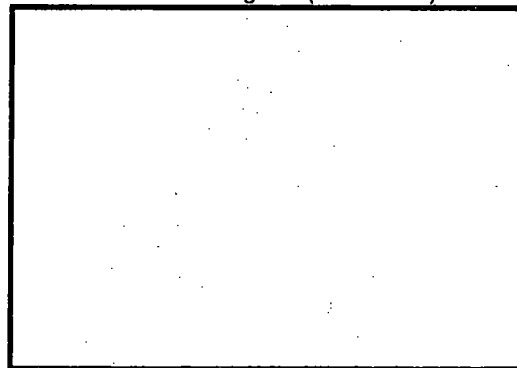
FIELD PARAMETERS:

Sample Method	_____
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>B₁#1: 49.3 ppm B₂#2: 63.4 ppm</u>
FID	_____

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
TOTAL:	

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-16-071407</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/10/07</u>	Sampling Personnel	<u>JS</u>
Time	<u>11:10</u>	Duplicate ID	<u> </u>
Weather	<u>Sunny 90's</u>	Barometric Pressure	<u> </u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u> </u>	Cannister Type	<u> </u>
Facility	<u>Former BES</u>	Cannister No.	<u>35277</u>
Floor Type	<u>Concrete</u>	Flow Regulator No.	<u>35277</u>
Cracks?	<u> </u>	Pre Sample Vacuum	<u>26.8</u>
Room Dimensions	<u> </u>	Sample Depth (ft)	<u>6.5"</u>
Tie Meas. 1	<u> </u>	Purge Time	<u>10 min</u>
Tie Meas. 2	<u> </u>	Purge Rate	<u>200 mL/min</u>
Tie Meas. 3	<u> </u>	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1157</u>
		End Sample Time	<u>1322</u>
		End Sample Vacuum	<u>0.0</u>

FIELD PARAMETERS:

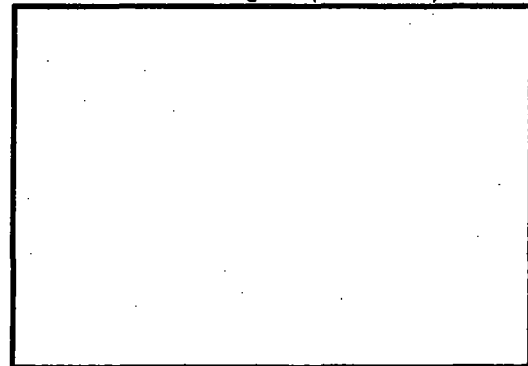
Sample Method	<u> </u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>bag #1 = 127 ppm bag #2 = 71.7 ppm</u>
FID	<u> </u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

TOTAL:

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-17-071107</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/11/07</u>	Sampling Personnel	<u>JS</u>
Time	<u>0952 1040</u>	Duplicate ID	<u> </u>
Weather	<u>3447 90's</u>	Barometric Pressure	<u> </u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u> </u>	Cannister Type	<u> </u>
Facility	<u>Former BES</u>	Cannister No.	<u>0 34317 9939</u>
Floor Type	<u> </u>	Flow Regulator No.	<u>34317 9939</u>
Cracks?	<u> </u>	Pre Sample Vacuum	<u>27.5 27.5</u>
Room Dimensions	<u> </u>	Sample Depth (ft)	<u>5.5"</u>
Tie Meas. 1	<u> </u>	Purge Time	<u>10 min</u>
Tie Meas. 2	<u> </u>	Purge Rate	<u>20 L/min</u>
Tie Meas. 3	<u> </u>	Purge Volume	<u>2 L</u>
		Begin Sample Time	<u>0950 1040</u>
		End Sample Time	<u>1240</u>
		End Sample Vacuum	<u>21.0</u>

FIELD PARAMETERS:

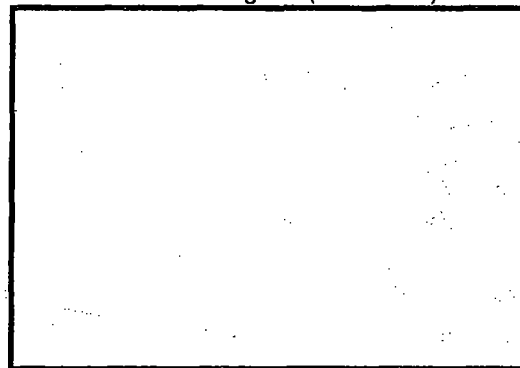
Sample Method	<u>TO-15</u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>76.7 ug.</u>
FID	<u> </u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

TOTAL:

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-18-071107</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/11/17</u>	Sampling Personnel	<u>JJ</u>
Time	<u>1055</u>	Duplicate ID	<u>SS-180-071107</u>
Weather	<u>Sunny 70's</u>	Barometric Pressure	<u></u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u></u>	Cannister Type	<u>25248 / 9950</u>
Facility	<u>Former BES</u>	Cannister No.	<u>25248 / 9950</u>
Floor Type	<u>concrete</u>	Flow Regulator No.	<u>27.3 / 28.3</u>
Cracks?	<u></u>	Pre Sample Vacuum	<u>10.53</u>
Room Dimensions	<u></u>	Sample Depth (ft)	<u></u>
Tie Meas. 1	<u></u>	Purge Time	<u>10 min</u>
Tie Meas. 2	<u></u>	Purge Rate	<u>200 ml/min</u>
Tie Meas. 3	<u></u>	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1055</u>
		End Sample Time	<u>1250</u>
		End Sample Vacuum	<u><1.0 / <1.2</u>

FIELD PARAMETERS:

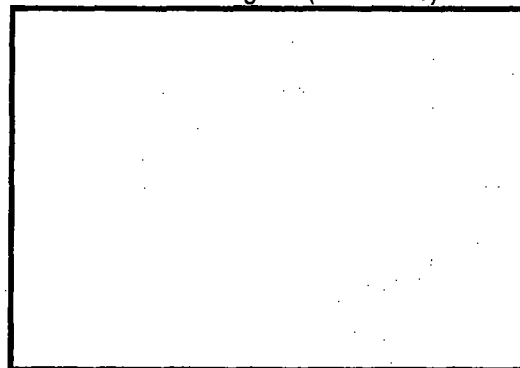
Sample Method	<u>TO-15</u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>74.4 Avg.</u>
FID	<u></u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>

TOTAL:

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-19-071007</u>	Project/No.	<u>NP000597.0006</u>
Date	<u>7-10-07</u>	Sampling Personnel	<u>EDM, FS, JS</u>
Time	<u>1000</u>	Duplicate ID	<u>—</u>
Weather	<u>Hot, 90's</u>	Barometric Pressure	<u> </u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u> </u>	Cannister Type	<u>Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>33985</u>
Floor Type	<u>concrete</u>	Flow Regulator No.	<u>33985</u>
Cracks?	<u>~</u>	Pre Sample Vacuum	<u>29.8</u>
Room Dimensions	<u> </u>	Sample Depth (ft)	<u>6.5"</u>
Tie Meas. 1	<u> </u>	Purge Time	<u>10 min</u>
Tie Meas. 2	<u> </u>	Purge Rate	<u>200ml</u>
Tie Meas. 3	<u> </u>	Purge Volume	<u>2L</u>
		Begin Sample Time	<u>1020</u>
		End Sample Time	<u>1103 *</u>
		End Sample Vacuum	<u>5.5</u>

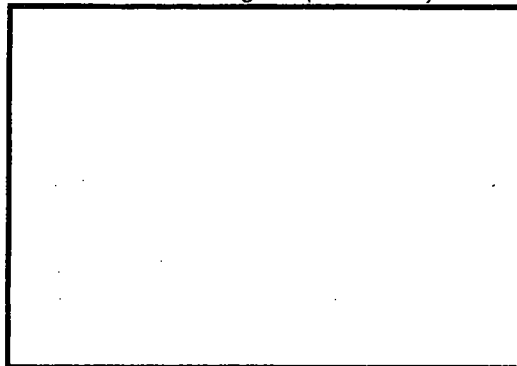
FIELD PARAMETERS:

Sample Method	<u> </u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>114 ppm</u>
FID	<u> </u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
TOTAL:	<u> </u>

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>SS-20-071007</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7.10.07</u>	Sampling Personnel	<u>ROM</u>
Time	<u>1025</u>	Duplicate ID	<u>n/g</u>
Weather	<u>hazy, humid 80s</u>	Barometric Pressure	<u>n/g</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>Belly SS-20</u>	Cannister Type	<u>6L Summa</u>
Facility	<u>Former BES</u>	Cannister No.	<u>34470</u>
Floor Type	<u>concrete</u>	Flow Regulator No.	<u>34470</u>
Cracks?	<u>seam ~ 4'</u>	Pre Sample Vacuum	<u>-29.5" Hg</u>
Room Dimensions		Sample Depth (ft)	<u>~ 7'</u>
Tie Meas. 1		Purge Time	<u>1015 - 1025</u>
Tie Meas. 2		Purge Rate	<u>200 mL/min</u>
Tie Meas. 3		Purge Volume	<u>~ 2L</u>
		Begin Sample Time	<u>1025</u>
		End Sample Time	<u>1148</u>
		End Sample Vacuum	<u>< 1</u>

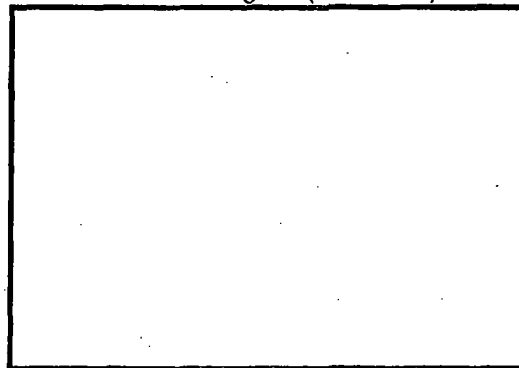
FIELD PARAMETERS:

Sample Method	<u>TO-15</u>
Sample Description	<u>Sub Slab Vapor</u>
PID	<u>4.7</u>
FID	<u>n/g</u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
TOTAL:	<u>1</u>

Location Diagram (Show Ties)





ARCADIS G&M

~~SOIL VAPOR~~ SAMPLE LOG

Sample ID	SSD-1	Project/No.	NP000597.0006.
Date	7.13.02	Sampling Personnel	ROM AF PJ CTS
Time	1055	Duplicate ID	n/g
Weather	partly cloudy, 80s	Barometric Pressure	n/g

DESCRIPTION OF SAMPLE LOCATION:

DESCRIPTION OF SAMPLE LOCATION:		6 L Summary	
Location	SE area of Former BES Facility → SSD point	Cannister Type	35254
Facility	Former BES	Cannister No.	FC00567
Floor Type	concrete	Flow Regulator No.	
Cracks?	—	Pre Sample Vacuum	
Room Dimensions	—	Sample Depth (ft)	n/a
Tie Meas. 1	—	Purge Time	n/a
Tie Meas. 2	—	Purge Rate	n/a
Tie Meas. 3	—	Purge Volume	n/a
		Begin Sample Time	1055
		End Sample Time	1130
		End Sample Vacuum	-8.9" Hg

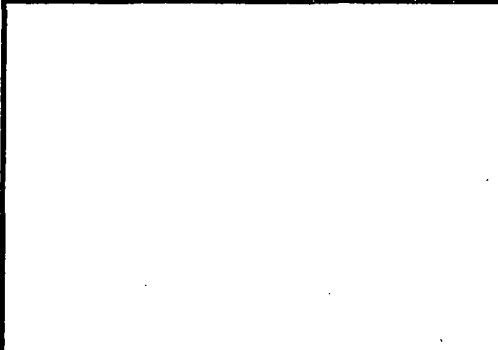
FIELD PARAMETERS:

Sample Method	70-15	End Sample Vacuum	-0.111g
Sample Description	Sub Slab Vapor Extracted Sub Slab Vapor		

PID _____
FID 2/9 _____

CONTAINER DESCRIPTION:[illegible]

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>IAQ-1-071607</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/16/07</u>	Sampling Personnel	<u>PJ</u>
Time	<u>0650</u>	Duplicate ID	<u>IAQ-10-071607</u>
Weather	<u>Cloudy</u>	Barometric Pressure	<u>-</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>BALLY, PA</u>	Cannister Type	<u>SIM</u>
Facility	<u>Former BES</u>	Cannister No.	<u>10784</u>
Floor Type	<u>Concrete</u>	Flow Regulator No.	<u>FC00658</u>
Cracks?	<u>No</u>	Pre Sample Vacuum	<u>>-30</u>
Room Dimensions	<u>-</u>	Sample Depth (ft)	<u>-</u>
Tie Meas. 1	<u>-</u>	Purge Time	<u>-</u>
Tie Meas. 2	<u>-</u>	Purge Rate	<u>-</u>
Tie Meas. 3	<u>-</u>	Purge Volume	<u>-</u>
		Begin Sample Time	<u>0650</u>
		End Sample Time	<u>1450</u>
		End Sample Vacuum	<u>-23.0</u>

FIELD PARAMETERS:

Sample Method	<u>-</u>
Sample Description	<u>Sub Slab Vapor Ambient Air (Indoor)</u>
PID	<u>-</u>
FID	<u>-</u>

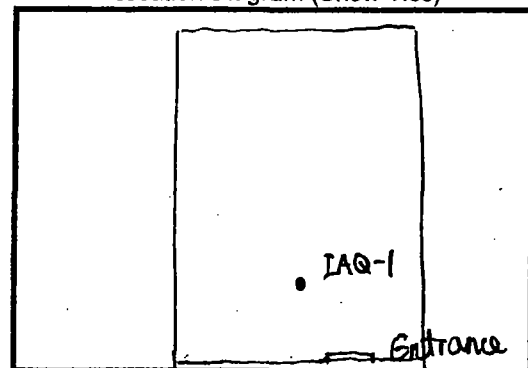
CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>

TOTAL:

--	--

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>IAQ-10-071607</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/16/07</u>	Sampling Personnel	<u>PJ</u>
Time	<u>0650</u>	Duplicate ID	<u>IAQ-10-071607</u>
Weather	<u>Cloudy</u>	Barometric Pressure	<u>-</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>BALLY, PA</u>	Cannister Type	<u>12666 SIM</u>
Facility	<u>Former BES</u>	Cannister No.	<u>12666</u>
Floor Type	<u>Concrete</u>	Flow Regulator No.	<u>FC00930</u>
Cracks?	<u>No</u>	Pre Sample Vacuum	<u>7-30</u>
Room Dimensions	<u>-</u>	Sample Depth (ft)	<u>-</u>
Tie Meas. 1	<u>-</u>	Purge Time	<u>-</u>
Tie Meas. 2	<u>-</u>	Purge Rate	<u>-</u>
Tie Meas. 3	<u>-</u>	Purge Volume	<u>-</u>
		Begin Sample Time	<u>0650</u>
		End Sample Time	<u>1450</u>
		End Sample Vacuum	<u>-8.0</u>

FIELD PARAMETERS:

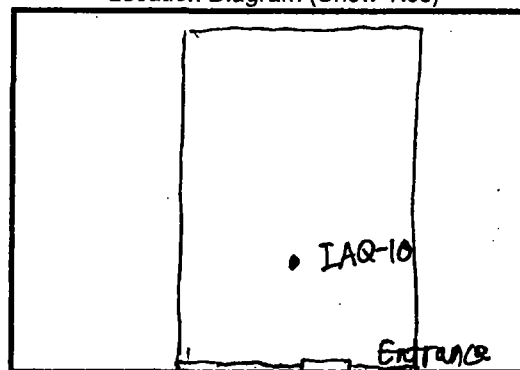
Sample Method	<u>-</u>
Sample Description	<u>Sub Slab Vapor Ambient Air (Indoor)</u>
PID	<u>-</u>
FID	<u>-</u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>

TOTAL: 1

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>IAQ-2-071607</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/16/07</u>	Sampling Personnel	<u>PJ</u>
Time	<u>0655</u>	Duplicate ID	<u>-</u>
Weather	<u>cloudy</u>	Barometric Pressure	<u>-</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>Bally, PA</u>	Cannister Type	<u>SIM</u>
Facility	<u>Former BES</u>	Cannister No.	<u>33872</u>
Floor Type	<u>Concrete</u>	Flow Regulator No.	<u>916-985-1010</u>
Cracks?	<u>Some around</u>	Pre Sample Vacuum	<u>-29.6</u>
Room Dimensions	<u> </u>	Sample Depth (ft)	<u>-</u>
Tie Meas. 1	<u> </u>	Purge Time	<u>-</u>
Tie Meas. 2	<u> </u>	Purge Rate	<u>-</u>
Tie Meas. 3	<u> </u>	Purge Volume	<u>-</u>
		Begin Sample Time	<u>0655</u>
		End Sample Time	<u>1455</u>
		End Sample Vacuum	<u>-8.5</u>

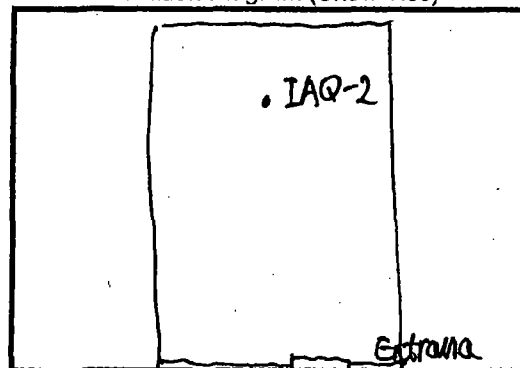
FIELD PARAMETERS:

Sample Method	<u> </u>
Sample Description	<u>Sub Slab Vapor Ambient Air (Indoor)</u>
PID	<u>-</u>
FID	<u>-</u>

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
TOTAL:	

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID AQDW-071607 Project/No. NP000597.0006.
 Date 7/16/07 Sampling Personnel PS
 Time 0705 Duplicate ID -
 Weather Cloudy Barometric Pressure -

DESCRIPTION OF SAMPLE LOCATION:

Location Bally, PA Cannister Type SIM
 Facility Former BES Cannister No. 9562
 Floor Type Flow Regulator No. FC00346
 Cracks? Pre Sample Vacuum 7-30
 Room Dimensions Sample Depth (ft) -
 Tie Meas. 1 Purge Time -
 Tie Meas. 2 Purge Rate -
 Tie Meas. 3 Purge Volume -
 Begin Sample Time 0705
 End Sample Time 1505
 End Sample Vacuum -8.1

FIELD PARAMETERS:

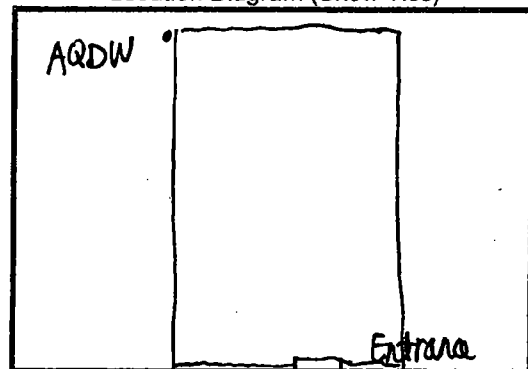
Sample Method
 Sample Description Sub-Slab Vapor Ambient Air (Outdoor, down wind)

PID
 FID

CONTAINER DESCRIPTION:

Container	Analysis
6L Summa	TO-15
TOTAL:	

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>AQUW-071607</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/16/07</u>	Sampling Personnel	<u>PJ</u>
Time	<u>0710</u>	Duplicate ID	<u>-</u>
Weather	<u>Cloudy</u>	Barometric Pressure	<u>-</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>Ballg, PA</u>	Cannister Type	<u>SIM</u>
Facility	<u>Former BES</u>	Cannister No.	<u>31157</u>
Floor Type	<u></u>	Flow Regulator No.	<u>FC00795</u>
Cracks?	<u></u>	Pre Sample Vacuum	<u>7-30</u>
Room Dimensions	<u></u>	Sample Depth (ft)	<u>-</u>
Tie Meas. 1	<u></u>	Purge Time	<u>-</u>
Tie Meas. 2	<u></u>	Purge Rate	<u>-</u>
Tie Meas. 3	<u></u>	Purge Volume	<u>-</u>
		Begin Sample Time	<u>0710</u>
		End Sample Time	<u>0715</u>
		End Sample Vacuum	<u>-18.0</u>

FIELD PARAMETERS:

Sample Method

Sample Description Sub Slab Vapor Ambient Air (Outdoor, Up Wind)

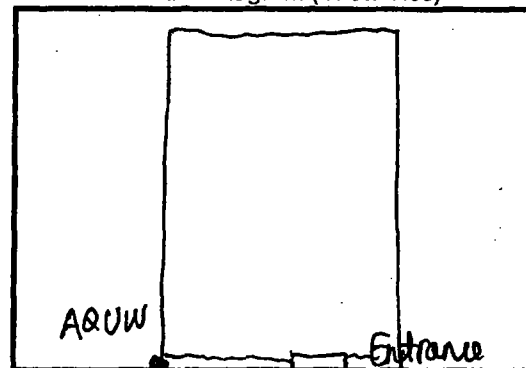
PID

FID

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
TOTAL:	<u>1</u>

Location Diagram (Show Ties)





ARCADIS G&M

SOIL VAPOR SAMPLE LOG

Sample ID	<u>AQUW-1-071607</u>	Project/No.	<u>NP000597.0006.</u>
Date	<u>7/16/07</u>	Sampling Personnel	<u>PS</u>
Time	<u>0910</u>	Duplicate ID	<u>-</u>
Weather	<u>Cloudy</u>	Barometric Pressure	<u>-</u>

DESCRIPTION OF SAMPLE LOCATION:

Location	<u>Bally, PA</u>	Cannister Type	<u>SIM</u>
Facility	<u>Former BES</u>	Cannister No.	<u>9564</u>
Floor Type	<u></u>	Flow Regulator No.	<u>FL00641</u>
Cracks?	<u></u>	Pre Sample Vacuum	<u>-30.0</u>
Room Dimensions	<u></u>	Sample Depth (ft)	<u>-</u>
Tie Meas. 1	<u></u>	Purge Time	<u>-</u>
Tie Meas. 2	<u></u>	Purge Rate	<u>-</u>
Tie Meas. 3	<u></u>	Purge Volume	<u>-</u>
		Begin Sample Time	<u>0910</u>
		End Sample Time	<u>1710</u>
		End Sample Vacuum	<u>-8.0</u>

FIELD PARAMETERS:

Sample Method

Sample Description ~~Sub-Slab Vapor~~ Ambient Air (Outdoor, Up Wind)

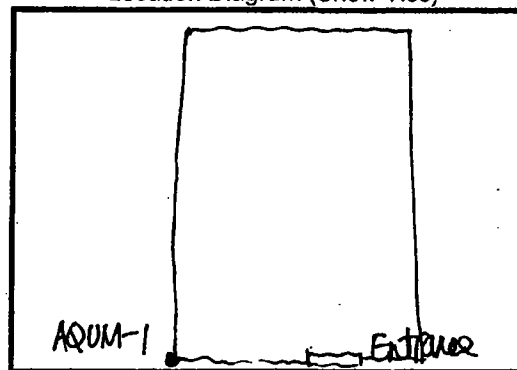
PID

FID

CONTAINER DESCRIPTION:

Container	Analysis
<u>6L Summa</u>	<u>TO-15</u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
TOTAL:	

Location Diagram (Show Ties)



ARCADIS

Appendix C

Data Validation Reports (including
Laboratory Data Packages)

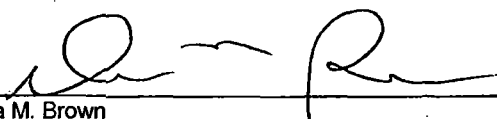
**DATA VALIDATION OF VAPOR
SAMPLES COLLECTED AT THE
BALLY SITE, JULY 2007**

JULY 10, 2007 through JULY 16, 2007

REVIEWED BY:
DONNA M. BROWN, PROJECT SCIENTIST II
LISA HORTON, STAFF SCIENTIST



Lisa Horton
Staff Scientist



Donna M. Brown
Project Scientist II

Data Validation

Bally, PA

Prepared for:
USEPA Region III

Prepared by:
ARCADIS G&M, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610

Our Ref.:
NP000597.0006.00007

Date:
14 September 2007

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Data Validation

Bally, PA

Data Validation Narrative for SDG 0707182A

Overview for SDG 0707182A

The samples were sent to Air Toxics Ltd, located in Folsom, California for analysis. The samples were analyzed for selected volatile organic compounds (VOCs) by modified United States Environmental Protection Agency (USEPA) Method TO-15 for Contract List.

Two samples (SS-14-071007 and field duplicate SS-140-071007) were collected on July 10, 2007.

Summary for SDG 0707182A

The QC presented in SDG 0707182A is acceptable with no qualification of the data necessary.

Major Problems for SDG 0707182A

None.

Minor Problems for SDG 0707182A

None.

Notes for SDG 0707182A

Data were analyzed within holding time requirements. Target compounds were not detected in associated laboratory method blank(s). Normalized relative % abundance met ion abundance criteria. Initial and continuing calibrations were analyzed and were within percent relative standard deviation (%RSD)/percent difference (%D) and relative response factor (RRF) QC limits. The laboratory control samples (LCS) were within QC limits. The surrogate spikes and internal standard areas/retentions times were within QC limits. All detected target compounds were verified by review of spectra against laboratory standard spectra and review of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT. QC results and detected target compound concentrations were reproduced successfully through calculation.

Data Validation

Bally, PA

Report Content Statement for SDG 0707182A

A Level M3 validation of the VOC data was performed following: "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); and, the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, Revision VCAA01.0).

Data Validation Narrative for SDG 0707182B

Overview for SDG 0707182B

The samples were sent to Air Toxics Ltd, located in Folsom, California for analysis. The samples were analyzed for selected VOCs by modified USEPA Method TO-15 for Contract List.

Nine samples (SS-2-071007, SS-20-071007, SS-1-071007, SS-13-071007, SS-16-071007, SS-19-071007, SS-12-071007, SS-15-071007 and SS-11-071007) were collected on July 10, 2007.

Summary for SDG 0707182B

The QC presented in SDG 0707182B is acceptable with no qualification of the data necessary.

Major Problems for SDG 0707182B

None.

Minor Problems for SDG 0707182B

None.

Notes for SDG 0707182B

Data were analyzed within holding time requirements. Target compounds were not detected in associated laboratory method blank(s). Normalized relative % abundance met ion abundance criteria. Initial and continuing calibrations were analyzed and were within %RSD/ %D and RRF QC limits. The LCS were within QC limits. The

Data Validation

Bally, PA

surrogate spikes and internal standard areas/retentions times were within QC limits. All detected target compounds were verified by review of spectra against laboratory standard spectra and review of RRT to be within +/- 0.06 RRT units of the standard RRT. QC results and detected target compound concentrations were reproduced successfully through calculation.

Report Content Statement for SDG 0707182B

A Level M3 validation of the VOC data was performed following: "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); and, the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, Revision VCAA01.0).

Data Validation Narrative for SDG 0707204A

Overview for SDG 0707204A

The samples were sent to Air Toxics Ltd, located in Folsom, California for analysis. The samples were analyzed for selected VOCs by modified USEPA Method TO-15 for Contract List.

One sample (SS-6-071107) was collected on July 11, 2007.

Summary for SDG 0707204A

The QC presented in SDG 0707204A is acceptable with no qualification of the data necessary.

Major Problems for SDG 0707204A

None.

Minor Problems for SDG 0505509

None.

Data Validation

Bally, PA

Notes for SDG 0707204A

Data were analyzed within holding time requirements. Target compounds were not detected in associated laboratory method blank(s). Normalized relative % abundance met ion abundance criteria. Initial and continuing calibrations were analyzed and were within %RSD/ %D and RRF QC limits. The LCSs were within QC limits. The surrogate spikes and internal standard areas/retentions times were within QC limits. All detected target compounds were verified by review of spectra against laboratory standard spectra and review of RRT to be within +/- 0.06 RRT units of the standard RRT. QC results and detected target compound concentrations were reproduced successfully through calculation.

Report Content Statement for SDG 0707204A

A Level M3 validation of the VOC data was performed following: "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); and, the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, Revision VCAA01.0).

Data Validation Narrative for SDG 0707204B

Overview for SDG 0707204B

The samples were sent to Air Toxics Ltd, located in Folsom, California for analysis. The samples were analyzed for selected VOCs by modified USEPA Method TO-15 for Contract List.

10 samples (SS-3-071107, SS-4-071107, SS-5-071107, SS-9-071107, SS-10-071107, SS-17-071107 and SS-18-071107; and, field duplicates SS-90-071107, SS-110-071107, and SS-180-071107) were collected on July 11, 2007.

Summary for SDG 0707204B

The QC presented in SDG 0707204B is acceptable with the qualifications listed below.

Major Problems for SDG 0707204B

None.

Data Validation

Bally, PA

Minor Problems for SDG 0707204B

Sample SS-09-071107 was replicated in the field and labeled SS-90-071107. Based on the relative percent difference (RPD) value, calculated from the concentrations of like target compounds in both samples, 1,1-dichloroethene, 1,1,1-trichloroethane and trichloroethene were qualified as estimated (J) in both samples.

Sample SS-10-071107 was replicated in the field and labeled SS-110-071107. Based on the RPD value, calculated from the concentrations of like target compounds in both samples, trichloroethene was qualified as estimated (J) in both samples.

Sample SS-18-071107 was replicated in the field and labeled SS-180-071107. Based on the RPD value, calculated from the concentrations of like target compounds in both samples, trichloroethene was qualified as estimated (J) in both samples.

Notes for SDG 0707204B

Data were analyzed within holding time requirements. Target compounds were not detected in associated laboratory method blank(s). Normalized relative % abundance met ion abundance criteria. Initial and continuing calibrations were analyzed and were within %RSD/ %D and RRF QC limits. The LCSs were within QC limits. The surrogate spikes and internal standard areas/retentions times were within QC limits. All detected target compounds were verified by review of spectra against laboratory standard spectra and review of RRT to be within +/- 0.06 RRT units of the standard RRT. QC results and detected target compound concentrations were reproduced successfully through calculation.

Report Content Statement for SDG 0707204B

A Level M3 validation of the VOC data was performed following: "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); and, the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, Revision VCAA01.0).

Data Validation

Bally, PA

Data Validation Narrative for SDG 0707227

Overview for SDG 0707227

The samples were sent to Air Toxics Ltd, located in Folsom, California for analysis. The samples were analyzed for selected VOCs by modified USEPA Method TO-15 for Contract List.

One sample (SS-7-071207) was collected on July 12, 2007.

Summary for SDG 0707227

The QC presented in SDG 0707227 is acceptable with no qualification of the data necessary.

Major Problems for SDG 0707227

None.

Minor Problems for SDG 0707227

None.

Notes for SDG 0707227

Data were analyzed within holding time requirements. Target compounds were not detected in associated laboratory method blank(s). Normalized relative % abundance met ion abundance criteria. Initial and continuing calibrations were analyzed and were within %RSD/ %D and RRF QC limits. The LCSs were within QC limits. The surrogate spikes and internal standard areas/retentions times were within QC limits. All detected target compounds were verified by review of spectra against laboratory standard spectra and review of RRT to be within +/- 0.06 RRT units of the standard RRT. QC results and detected target compound concentrations were reproduced successfully through calculation.

Report Content Statement for SDG 0707227

A Level M3 validation of the VOC data was performed following: "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-

Data Validation

Bally, PA

Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); and, the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, Revision VCAA01.0).

Data Validation Narrative for SDG 0707227B

Overview for SDG 0707227B

The samples were sent to Air Toxics Ltd, located in Folsom, California for analysis. The samples were analyzed for selected VOCs by modified USEPA Method TO-15 for Contract List.

One sample (SS-8-071207) was collected on either July 12, 2007.

Summary for SDG 0707227B

The QC presented in SDG 0707227B is acceptable with no qualification of the data necessary.

Major Problems for SDG 0707227B

None.

Minor Problems for SDG 0707227B

None.

Notes for SDG 0707227B

Data were analyzed within holding time requirements. Target compounds were not detected in associated laboratory method blank(s). Normalized relative % abundance met ion abundance criteria. Initial and continuing calibrations were analyzed and were within %RSD/ %D and RRF QC limits. The LCSs were within QC limits. The surrogate spikes and internal standard areas/retentions times were within QC limits. All detected target compounds were verified by review of spectra against laboratory standard spectra and review of RRT to be within +/- 0.06 RRT units of the standard RRT. QC results and detected target compound concentrations were reproduced successfully through calculation.

Data Validation

Bally, PA

Report Content Statement for SDG 0707227B

A Level M3 validation of the VOC data was performed following: "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); and, the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, Revision VCAA01.0).

Data Validation Narrative for SDG 0707252

Overview for SDG 0707252

The samples were sent to Air Toxics Ltd, located in Folsom, California for analysis. The samples were analyzed for selected VOCs by modified USEPA Method TO-15 for Contract List.

One sample (SSD-1) was collected on July 13, 2007.

Summary for SDG 0707252

The QC presented in SDG 0707252 is acceptable with no qualification of the data necessary.

Major Problems for SDG 0707252

None.

Minor Problems for SDG 0707252

None.

Notes for SDG 0707252

Data were analyzed within holding time requirements. Target compounds were not detected in associated laboratory method blank(s). Normalized relative % abundance met ion abundance criteria. Initial and continuing calibrations were analyzed and were within %RSD/ %D and RRF QC limits. The LCSs were within QC limits. The surrogate spikes and internal standard areas/retentions times were within QC limits. All detected target compounds were verified by review of spectra against laboratory

Data Validation

Bally, PA

standard spectra and review of RRT to be within +/- 0.06 RRT units of the standard RRT. QC results and detected target compound concentrations were reproduced successfully through calculation.

Report Content Statement for SDG 0707252

A Level M3 validation of the VOC data was performed following: "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); and, the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, Revision VCAA01.0).

Data Validation Narrative for SDG 0707298

Overview for SDG 0707298

The samples were sent to Air Toxics Ltd, located in Folsom, California for analysis. The samples were analyzed for selected VOCs by modified USEPA Method TO-15 SIM for Contract List.

Four samples (IAQ-1-071607, IAQ-2-071607, IAQ-10-071607 and AQDW-071607) were collected on July 16, 2007.

Summary for SDG 0707298

The QC presented in SDG 0707298 is acceptable with no qualification of the data necessary.

Major Problems for SDG 0707298

None.

Minor Problems for SDG 0707298

None.

Data Validation

Bally, PA

Notes for SDG 0707298

Data were analyzed within holding time requirements. Target compounds were not detected in associated laboratory method blank(s). Normalized relative % abundance met ion abundance criteria. Initial and continuing calibrations were analyzed and were within %RSD/ %D and RRF QC limits. The LCSs were within QC limits. The surrogate spikes and internal standard areas/retentions times were within QC limits. All detected target compounds were verified by review of spectra against laboratory standard spectra and review of RRT to be within +/- 0.06 RRT units of the standard RRT. QC results and detected target compound concentrations were reproduced successfully through calculation.

Report Content Statement for SDG 0707298

A Level M3 validation of the VOC data was performed following: "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); and, the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, Revision VCAA01.0).

Data Validation Narrative for SDG 0707299

Overview for SDG 0707299

The samples were sent to Air Toxics Ltd, located in Folsom, California for analysis. The samples were analyzed for selected VOCs by modified USEPA Method TO-15 SIM for Contract List.

Two samples (AQUW-071607 and AQUW-1-071607) were collected on July 16, 2007.

Summary for SDG 0707299

The QC presented in SDG 0707299 is acceptable with no qualification of the data necessary.

Major Problems for SDG 0707299

None.

Data Validation

Bally, PA

Minor Problems for SDG 0707299

None.

Notes for SDG 0707299

Data were analyzed within holding time requirements. Target compounds were not detected in associated laboratory method blank(s). Normalized relative % abundance met ion abundance criteria. Initial and continuing calibrations were analyzed and were within %RSD/ %D and RRF QC limits. The LCSs were within QC limits. The surrogate spikes and internal standard areas/retentions times were within QC limits. All detected target compounds were verified by review of spectra against laboratory standard spectra and review of RRT to be within +/- 0.06 RRT units of the standard RRT. QC results and detected target compound concentrations were reproduced successfully through calculation.

Report Content Statement for SDG 0707299

A Level M3 validation of the VOC data was performed following: "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); and, the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, Revision VCAA01.0).

Appendix A

Glossary of Data Qualifiers for all
SDGs

Data Validation

Bally, PA

Appendix A Glossary of Data Qualifiers

SDG 707182A: Qualification of the data was not necessary.

SDG 0707182B: Qualification of the data was not necessary.

SDG 0707204A: Qualification of the data was not necessary.

SDG 0707204B: Sample SS-09-071107 was replicated in the field and labeled SS-90-071107. Based on the relative percent difference (RPD) value, calculated from the concentrations of like target compounds in both samples, 1,1-dichloroethene, 1,1,1-trichloroethane and trichloroethene were qualified as estimated (J) in both samples.

Sample SS-10-071107 was replicated in the field and labeled SS-110-071107. Based on the RPD value, calculated from the concentrations of like target compounds in both samples, trichloroethene was qualified as estimated (J) in both samples.

Sample SS-18-071107 was replicated in the field and labeled SS-180-071107. Based on the RPD value, calculated from the concentrations of like target compounds in both samples, trichloroethene was qualified as estimated (J) in both samples.

SDG 0707227: Qualification of the data was not necessary.

SDG 0707227B: Qualification of the data was not necessary.

SDG 0707252: Qualification of the data was not necessary.

SDG 0707298: Qualification of the data was not necessary.

SDG 0707299: Qualification of the data was not necessary.

Glossary of Data Qualifiers

J – Estimated value.

Appendix C

Laboratory Report Results



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-140-071007

Lab ID#: 0707182A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	0712123	Date of Collection	7/10/07
File Ref	94	Date of Analysis	7/25/07 03:55 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	1.9	Not Detected	5.0	Not Detected
1,1-Dichloroethene	1.9	42	7.7	170
1,1-Dichloroethane	1.9	Not Detected	7.8	Not Detected
cis-1,2-Dichloroethene	1.9	Not Detected	7.7	Not Detected
1,1,1-Trichloroethane	1.9	21	10	120
Trichloroethene	1.9	590	10	3200

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	106	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-14-071007

Lab ID#: 0707182A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20724122	File or Collection:	7/10/07
File Path:	7/2	Date of Analysis:	7/25/07 08:09 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	2.7	Not Detected	7.0	Not Detected
1,1-Dichloroethene	2.7	46	11	180
1,1-Dichloroethane	2.7	Not Detected	11	Not Detected
cis-1,2-Dichloroethene	2.7	Not Detected	11	Not Detected
1,1,1-Trichloroethane	2.7	22	15	120
Trichloroethene	2.7	640	15	3400

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	112	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-2-071007

Lab ID#: 0707182B-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 072213	Date of Collection: 7/10/07
File Path: 380	Date of Analysis: 7/23/07 12:10 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	190	Not Detected	490	Not Detected
1,1-Dichloroethene	190	1200	760	4600
1,1-Dichloroethane	190	Not Detected	780	Not Detected
cis-1,2-Dichloroethene	190	Not Detected	760	Not Detected
1,1,1-Trichloroethane	190	700	1000	3800
Trichloroethene	190	41000	1000	220000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	95	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-20-071007

Lab ID#: 0707182B-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	10/22/07	Date of Collection:	7/10/07
Dil Factor:	30/2	Date of Analysis:	7/22/07 12:21 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	15	Not Detected	38	Not Detected
1,1-Dichloroethene	15	49	60	190
1,1-Dichloroethane	15	Not Detected	61	Not Detected
cis-1,2-Dichloroethene	15	Not Detected	60	Not Detected
1,1,1-Trichloroethane	15	48	82	260
Trichloroethene	15	5300	81	28000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	95	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-1-071007

Lab ID#: 0707182B-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	11/17/22/11	Date of Collection:	11/10/07
File Path:	223	Date of Analysis:	11/22/07 06:08 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	11	Not Detected	28	Not Detected
1,1-Dichloroethene	11	12	44	48
1,1-Dichloroethane	11	Not Detected	45	Not Detected
cis-1,2-Dichloroethene	11	Not Detected	44	Not Detected
1,1,1-Trichloroethane	11	Not Detected	61	Not Detected
Trichloroethene	11	3500	60	19000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	98	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-13-071007

Lab ID#: 0707182B-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1072220	Date of Collection:	7/19/07
File Path:	1520	Date of Analysis:	7/23/07 02:34 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	760	Not Detected	1900	Not Detected
1,1-Dichloroethene	760	850	3000	3400
1,1-Dichloroethane	760	Not Detected	3100	Not Detected
cis-1,2-Dichloroethene	760	Not Detected	3000	Not Detected
1,1,1-Trichloroethane	760	Not Detected	4100	Not Detected
Trichloroethene	760	190000	4100	1000000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	98	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-16-071007

Lab ID#: 0707182B-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	07/22/07	Date of Collection:	7/1/07
File Number:	907	Date of Analysis:	7/23/07 08:15 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	450	Not Detected	1200	Not Detected
1,1-Dichloroethene	450	Not Detected	1800	Not Detected
1,1-Dichloroethane	450	Not Detected	1800	Not Detected
cis-1,2-Dichloroethene	450	Not Detected	1800	Not Detected
1,1,1-Trichloroethane	450	Not Detected	2500	Not Detected
Trichloroethene	450	140000	2400	740000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	92	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	97	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-19-071007

Lab ID#: 0707182B-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	10/22/07	Date of Collection:	7/10/07
Dil Factor:	1070	Date of Analysis:	7/22/07 09:37 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	540	Not Detected	1400	Not Detected
1,1-Dichloroethene	540	Not Detected	2100	Not Detected
1,1-Dichloroethane	540	Not Detected	2200	Not Detected
cls-1,2-Dichloroethene	540	1200	2100	4800
1,1,1-Trichloroethane	540	Not Detected	2900	Not Detected
Trichloroethene	540	110000	2900	580000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	96	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-12-071007

Lab ID#: 0707182B-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	0707182B	Date of Collection	7/10/07
Dil Factor	1/20	Date of Analysis	7/23/07 04:17 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	1400	Not Detected	3500	Not Detected
1,1-Dichloroethene	1400	Not Detected	5400	Not Detected
1,1-Dichloroethane	1400	Not Detected	5500	Not Detected
cis-1,2-Dichloroethene	1400	Not Detected	5400	Not Detected
1,1,1-Trichloroethane	1400	Not Detected	7400	Not Detected
Trichloroethene	1400	300000	7300	1600000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	97	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-15-071007

Lab ID#: 0707182B-10A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1072214	Date of Collection:	7/10/07
Dir. Path:	59.5	Date of Analysis:	7/22/07 08:40 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	30	Not Detected	76	Not Detected
1,1-Dichloroethene	30	260	120	1000
1,1-Dichloroethane	30	Not Detected	120	Not Detected
cis-1,2-Dichloroethene	30	Not Detected	120	Not Detected
1,1,1-Trichloroethane	30	180	160	980
Trichloroethene	30	10000	160	55000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	96	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-11-071007

Lab ID#: 0707182B-11A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	072215	Patrol Collection	7/10/07
File Size	3630	Date of Analysis	7/22/07 10:19 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	4200	Not Detected	11000	Not Detected
1,1-Dichloroethene	4200	6200	16000	25000
1,1-Dichloroethane	4200	Not Detected	17000	Not Detected
cis-1,2-Dichloroethene	4200	Not Detected	16000	Not Detected
1,1,1-Trichloroethane	4200	9100	23000	50000
Trichloroethene	4200	780000	22000	4200000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	99	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-6-071107

Lab ID#: 0707204A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

PH Name	2072427	Date of Collection	7/11/07
DIL Factor	88.8	Date of Analysis	7/25/07 08:43 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	3.9	Not Detected	9.9	Not Detected
1,1-Dichloroethene	3.9	1100	15	4400
1,1-Dichloroethane	3.9	Not Detected	16	Not Detected
cis-1,2-Dichloroethene	3.9	Not Detected	15	Not Detected
1,1,1-Trichloroethane	3.9	30	21	160
Trichloroethene	3.9	1200	21	6500

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	91	70-130
4-Bromofluorobenzene	110	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-3-071107

Lab ID#: 0707204B-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	1072122	Date of Collection	7/11/07
Dil. Factor	1350	Date of Analysis	7/25/07 02:22 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	920	Not Detected	2400	Not Detected
1,1-Dichloroethene	920	57000	3700	220000
1,1-Dichloroethane	920	Not Detected	3700	Not Detected
cis-1,2-Dichloroethene	920	Not Detected	3700	Not Detected
1,1,1-Trichloroethane	920	33000	5000	180000
Trichloroethene	920	360000	5000	1900000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	98	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-4-071107

Lab ID#: 0707204B-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	072512	Date of Collection:	7/11/07
Oil Factor:	135	Date of Analysis:	7/25/07 04:05 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	92	Not Detected	240	Not Detected
1,1-Dichloroethene	92	24000	370	95000
1,1-Dichloroethane	92	Not Detected	370	Not Detected
cls-1,2-Dichloroethene	92	1700	370	6600
1,1,1-Trichloroethane	92	210	500	1100
Trichloroethene	92	14000	500	78000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	93	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-5-071107

Lab ID#: 0707204B-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	07/24/07	Date of Collection:	7/11/07
Oil Ref:	243	Date of Analysis:	7/24/07 4:15 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	120	Not Detected	310	Not Detected
1,1-Dichloroethene	120	36000	480	140000
1,1-Dichloroethane	120	Not Detected	490	Not Detected
cis-1,2-Dichloroethene	120	Not Detected	480	Not Detected
1,1,1-Trichloroethane	120	760	660	4200
Trichloroethene	120	26000	650	140000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	98	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-9-071107

Lab ID#: 0707204B-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1072421	Date of Collection:	7/17/07
Oil Field:	2300	Date of Analysis:	7/25/07 03:53 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	1200	Not Detected	2900	Not Detected
1,1-Dichloroethene	1200	240000	4600	960000
1,1-Dichloroethane	1200	Not Detected	4600	Not Detected
cis-1,2-Dichloroethene	1200	Not Detected	4600	Not Detected
1,1,1-Trichloroethane	1200	340000	6300	1800000
Trichloroethene	1200	31000	6200	160000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	92	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-90-071107

Lab ID#: 0707204B-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	10/24/23	Date of collection:	7/11/07
Dil Factor:	288	Date of Analysis:	7/25/07 04:48 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	140	Not Detected	370	Not Detected
1,1-Dichloroethene	140	26000	570	100000
1,1-Dichloroethane	140	Not Detected	580	Not Detected
cis-1,2-Dichloroethene	140	Not Detected	570	Not Detected
1,1,1-Trichloroethane	140	36000	780	190000
Trichloroethene	140	4600	770	25000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	99	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-10-071107

Lab ID#: 0707204B-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1072508	Date of Collection:	7/11/07
Dir Path:	2580	Date of Analysis:	7/25/07 01:19 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	1300	Not Detected	3300	Not Detected
1,1-Dichloroethene	1300	370000	5100	1500000
1,1-Dichloroethane	1300	Not Detected	5200	Not Detected
cis-1,2-Dichloroethene	1300	Not Detected	5100	Not Detected
1,1,1-Trichloroethane	1300	190000	7000	1000000
Trichloroethene	1300	310000	6900	1600000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	101	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-110-071107

Lab ID#: 0707204B-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	1072509	Date of Collection	7/11/07
Dil. Factor	2.80	Date of Analysis	7/25/07 02:07 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	1200	Not Detected	3200	Not Detected
1,1-Dichloroethene	1200	340000	4900	1400000
1,1-Dichloroethane	1200	Not Detected	5000	Not Detected
cis-1,2-Dichloroethene	1200	Not Detected	4900	Not Detected
1,1,1-Trichloroethane	1200	160000	6800	890000
Trichloroethene	1200	200000	6700	1100000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	99	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-17-071107

Lab ID#: 0707204B-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	10/25/10	Date of Collection:	7/11/07
Dir. Path:	468	Date of Analysis:	7/25/07 02:48 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	230	Not Detected	590	Not Detected
1,1-Dichloroethene	230	1700	920	6800
1,1-Dichloroethane	230	Not Detected	940	Not Detected
cis-1,2-Dichloroethene	230	Not Detected	920	Not Detected
1,1,1-Trichloroethane	230	2400	1300	13000
Trichloroethene	230	40000	1200	210000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	97	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-18-071107

Lab ID#: 0707204B-10A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1072425	Date of Collection:	7/11/07
Dir: GC:	336	Date of Analysis:	7/25/07 05:46 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	170	Not Detected	430	Not Detected
1,1-Dichloroethene	170	32000	670	120000
1,1-Dichloroethane	170	Not Detected	680	Not Detected
cis-1,2-Dichloroethene	170	Not Detected	670	Not Detected
1,1,1-Trichloroethane	170	40000	920	220000
Trichloroethene	170	24000	900	130000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	94	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-180-071107

Lab ID#: 0707204B-11A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	072511	Date of Collection:	7/11/07
Lab ID:	272	Date of Analysis:	7/25/07 03:25 PM

Compound	Rot. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	140	Not Detected	350	Not Detected
1,1-Dichloroethene	140	28000	540	110000
1,1-Dichloroethane	140	Not Detected	550	Not Detected
cis-1,2-Dichloroethene	140	Not Detected	540	Not Detected
1,1,1-Trichloroethane	140	38000	740	210000
Trichloroethene	140	18000	730	98000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	99	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-7-071207

Lab ID#: 0707227-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	07/24/07	Date of Collection	7/12/07
DR#	45	Date of Analysis	7/25/07 04:38 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	1.2	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.2	300	4.6	1200
1,1-Dichloroethane	1.2	Not Detected	4.6	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	19	6.3	100
Trichloroethene	1.2	33	6.2	180

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	108	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-8-071207

Lab ID#: 0707227B-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

PREPARED BY	10/25/15	Date of Collection: 7/14/17
DI. FAHO	207	Date of Analysis: 7/25/17 06:54 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	100	Not Detected	260	Not Detected
1,1-Dichloroethene	100	36000	410	140000
1,1-Dichloroethane	100	Not Detected	420	Not Detected
cls-1,2-Dichloroethene	100	Not Detected	410	Not Detected
1,1,1-Trichloroethane	100	10000	560	56000
Trichloroethene	100	3900	560	21000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	96	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SSD-1

Lab ID#: 0707252-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	07251	Date of Collection:	7/19/07
File Folder:	358	Date of Analysis:	7/26/07 08:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	180	Not Detected	460	Not Detected
1,1-Dichloroethene	180	Not Detected	710	Not Detected
1,1-Dichloroethane	180	Not Detected	720	Not Detected
cis-1,2-Dichloroethene	180	Not Detected	710	Not Detected
1,1,1-Trichloroethane	180	Not Detected	980	Not Detected
Trichloroethene	180	48000	960	260000

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	111	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: IAQ-1-071607

Lab ID#: 0707298-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	6071838	Date of Collection:	7/13/07
File Path:	S03	Date of Analysis:	7/13/07 11:52 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.050	0.49	0.20	2.0
1,1-Dichloroethane	0.10	Not Detected	0.41	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
1,1,1-Trichloroethane	0.10	0.92	0.55	5.0
Trichloroethene	0.10	3.6	0.54	19

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	89	70-130
Toluene-d8	85	70-130
4-Bromofluorobenzene	100	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: IAQ-2-071607

Lab ID#: 0707298-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	6071841	Date of Collection:	7/16/07
File Ref:	188	Date of Analysis:	7/19/07 01:57 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.018	Not Detected	0.047	Not Detected
1,1-Dichloroethene	0.018	5.7	0.072	23
1,1-Dichloroethane	0.037	Not Detected	0.15	Not Detected
cis-1,2-Dichloroethene	0.037	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.037	11	0.20	62
Trichloroethene	0.037	9.8	0.20	53

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	84	70-130
Toluene-d8	86	70-130
4-Bromofluorobenzene	113	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: IAQ-10-071607

Lab ID#: 0707298-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name	0707298-03A	Date of Collection	7/16/07
File Path	175	Date of Analysis	7/19/07 03:15 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
1,1-Dichloroethene	0.018	0.75	0.069	3.0
1,1-Dichloroethane	0.035	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.035	0.92	0.19	5.0
Trichloroethene	0.035	3.4	0.19	18

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	107	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: AQDW-071607

Lab ID#: 0707298-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name	0074846	Date of Collection	7/15/07
Dil. Factor	1.75	Date of Analysis	7/19/07 03:59 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
1,1-Dichloroethene	0.018	0.092	0.069	0.36
1,1-Dichloroethane	0.035	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.035	0.11	0.19	0.63
Trichloroethene	0.035	0.12	0.19	0.64

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	79	70-130
Toluene-d8	90	70-130
4-Bromofluorobenzene	111	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: AQUW-071607

Lab ID#: 0707299-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	6071817	Date of Collection:	7/16/07
File Folder:	238	Date of Analysis:	7/19/07 04:47 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.030	Not Detected	0.076	Not Detected
1,1-Dichloroethene	0.030	Not Detected	0.12	Not Detected
1,1-Dichloroethane	0.060	Not Detected	0.24	Not Detected
cls-1,2-Dichloroethene	0.060	Not Detected	0.24	Not Detected
1,1,1-Trichloroethane	0.060	Not Detected	0.32	Not Detected
Trichloroethene	0.060	0.062	0.32	0.33

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	99	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: AQUW-1-071607

Lab ID#: 0707299-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	60718181	Date of Collection:	7/19/07
File Path:	187	Date of Analysis:	7/19/07 05:33 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.019	Not Detected	0.048	Not Detected
1,1-Dichloroethene	0.019	Not Detected	0.074	Not Detected
1,1-Dichloroethane	0.037	Not Detected	0.15	Not Detected
cis-1,2-Dichloroethene	0.037	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.037	Not Detected	0.20	Not Detected
Trichloroethene	0.037	0.044	0.20	0.24

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	80	70-130
Toluene-d8	90	70-130
4-Bromofluorobenzene	110	70-130

Appendix D

Laboratory Report Results for TICs
(Not Analyzed)

DATA VALIDATION CHECKLIST

Project Name: Bally, PA
Project Number: NP000597.0006.00007
Sample Date(s): July 10, 2007
Sample Team: R. McKinney
Matrix/Number of: Air / 2
Samples: Air/ 4 Duplicates/ 0
samples Trip Blanks / 0
Field Blanks/ 0

Analyzing Laboratory: Air Toxics Ltd., Folsom, California

Analyses: Volatile organic compounds (VOCs) by USEPA method Modified TO-15

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville, New York
11747
Tel: 631-249-7600
Fax: 631-249-7610

Laboratory Report Job Number: 0707182A Dated: July 26, 2007

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); guidance from the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, HW-18, Rev 0); and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES VOCs

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)					X
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X
VOCs - volatile organic compounds %D - percent difference RRF - relative response factor					
%R - percent recovery %RSD - percent relative standard deviation RPD - relative percent difference					

Comments:

Performance was acceptable with the following notes:

1. Samples were run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.
2. One method blank was associated with the samples. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.
3. All normalized bromofluorobenzene (BFB) relative % abundance met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.
4. One initial calibration was associated with sample. All target compound RRFs and %RSDs met QC criteria of greater than 0.01 and <30%, respectively. And all selected RRF and %RSD values were found reproducible through calculation.
5. One continuing calibration was associated with sample. All target compound RRFs and %Ds met QC criteria of greater than 0.01 and <25%, respectively. And all selected RRF and %D values were found reproducible through calculation.
9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.
10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- .33 minutes (or 20 seconds) and +/- 40%, respectively.
12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.
13. Sample SS-14-071007 was a field replicate of sample SS-140-071007. Based on the relative percent difference (RPD) value, calculated from the concentrations of like target compounds in both samples, all data was acceptable.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

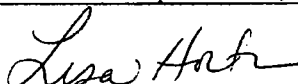
Job Number: 0707182A

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE:

Lisa Horton September 11, 2007

VALIDATION REVIEWED BY
SIGNATURE:



PEER REVIEW:

Donna M. Brown September 13, 2007

DATA VALIDATION CHECKLIST

Project Name: Bally, PA
Project Number: NP000597.0006.00007
Sample Date(s): July 10, 2007
Sample Team: R. McKinney
Matrix/Number of: Air / 9
Samples: Air/ 4 Duplicates/ 0
samples Trip Blanks / 0
Field Blanks/ 0

Analyzing Laboratory: Air Toxics Ltd., Folsom, California
Analyses: Volatile organic compounds (VOCs) by USEPA method Modified TO-15

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville, New York
11747
Tel: 631-249-7800
Fax: 631-249-7610

Laboratory Report Job Number: 0707182B Dated: July 26, 2007

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); guidance from the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, HW-18, Rev 0); and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES

VOCs

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)					X
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X
VOCs - volatile organic compounds %D - percent difference RRF - relative response factor					
%R - percent recovery %RSD - percent relative standard deviation RPD - relative percent difference					

Comments:

Performance was acceptable with the following notes:

1. Samples were run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.
2. One method blank was associated with the samples. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.
3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.
4. One initial calibration was associated with samples. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation.
5. One continuing calibration was associated with samples. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. And all selected RRF and %D values were found reproducible through calculation.
9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.
10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.
12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

Job Number: 0707182B

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE:

Lisa Horton September 7, 2007

VALIDATION REVIEWED BY
SIGNATURE:

Lisa Horton

PEER REVIEW:

Donna M. Brown September 13, 2007

DATA VALIDATION CHECKLIST

Project Name: Bally, PA
Project Number: NP000597.0006.00007
Sample Date(s): July 11, 2007
Sample Team: R. McKinney
Matrix/Number of: Air / 1
Samples: Air/ 4 Duplicates/ 0
samples Trip Blanks / 0
Field Blanks/ 0

Analyzing Laboratory: Air Toxics Ltd., Folsom, California

Analyses: Volatile organic compounds (VOCs) by USEPA method Modified TO-15

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville, New York
11747
Tel: 631-249-7800
Fax: 631-249-7610

Laboratory Report Job Number: 0707204A Dated: July 31, 2007

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); guidance from the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, HW-18, Rev 0); and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES

VOCs

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)					X
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X
VOCs - volatile organic compounds %D - percent difference RRF - relative response factor %R - percent recovery %RSD - percent relative standard deviation RPD - relative percent difference					

Comments:

Performance was acceptable with the following notes:

1. The sample was run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.
2. One method blank was associated with the sample. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.
3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.
4. One initial calibration was associated with sample. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation.
5. One continuing calibration was associated with sample. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. And all selected RRF and %D values were found reproducible through calculation.
9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.
10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.
12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

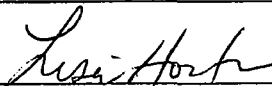
Job Number: 0707204A

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE:

Lisa Horton September 7, 2007

VALIDATION REVIEWED BY
SIGNATURE:



PEER REVIEW:

Donna M. Brown September 13, 2007

DATA VALIDATION CHECKLIST

Project Name: Bally, PA
Project Number: NP000597.0006.00007
Sample Date(s): July 11, 2007
Sample Team: J. Shafer
Matrix/Number of: Air / 10
Samples: Air/ 4 Duplicates/ 0
samples Trip Blanks / 0
Field Blanks/ 0

Analyzing Laboratory: Air Toxics Ltd., Folsom, California

Analyses: Volatile organic compounds (VOCs) by USEPA method Modified TO-15

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville, New York
11747
Tel: 631-249-7600
Fax: 631-249-7610

Laboratory Report Job Number: 0707204B Dated: July 31, 2007

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); guidance from the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, HW-18, Rev 0); and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES

VOCs

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)					X
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X
VOCs - volatile organic compounds %D - percent difference RRF - relative response factor %R - percent recovery %RSD - percent relative standard deviation RPD - relative percent difference					

Comments:

Performance was acceptable with the following notes:

1. Samples were run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.
2. Two method blanks were associated with the samples. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.
3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.
4. One initial calibration was associated with samples. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation.
5. Two continuing calibrations were associated with samples. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. And all selected RRF and %D values were found reproducible through calculation.
9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.
10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.

12. Sample SS-09-071107 was replicated in the field and labeled SS-90-071107. Based on the relative percent difference (RPD) value, calculated from the concentrations of like target compounds in both samples, 1,1-dichloroethene, 1,1,1-trichloroethane and trichloroethene were qualified as estimated (J) in both samples.

Sample SS-10-071107 was replicated in the field and labeled SS-110-071107. Based on the RPD value, calculated from the concentrations of like target compounds in both samples, trichloroethene was qualified as estimated (J) in both samples.

Sample SS-18-071107 was replicated in the field and labeled SS-180-071107. Based on the RPD value, calculated from the concentrations of like target compounds in both samples, trichloroethene was qualified as estimated (J) in both samples.

13. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

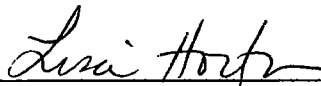
Job Number: 0707204B

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
SS-09-071107 and SS-90-071107	1,1-Dichloroethene, 1,1,1-trichloroethane and trichloroethene	J	Replicated data did not meet RPD QC criteria
SS-10-071107 and SS-110-071107	Trichloroethene	J	Replicated data did not meet RPD QC criteria
SS-18-071107 and SS-180-071107	Trichloroethene	J	Replicated data did not meet RPD QC criteria

VALIDATION PERFORMED BY/DATE:

Lisa Horton September 7, 2007

VALIDATION REVIEWED BY
SIGNATURE:



PEER REVIEW:

Donna M. Brown September 13, 2007

DATA VALIDATION CHECKLIST

Project Name: Bally, PA
Project Number: NP000597.0006.00007
Sample Date(s): July 12, 2007
Sample Team: R. McKinney
Matrix/Number of: Air / 1
Samples: Air/ 4
samples Duplicates/ 0
Trip Blanks / 0
Field Blanks/ 0

Analyzing
Laboratory: Air Toxics Ltd., Folsom, California

Analyses: Volatile organic compounds (VOCs) by USEPA method Modified TO-15

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville, New York
11747
Tel: 631-249-7600
Fax: 631-249-7610

Laboratory Report Job Number: 0707227 Dated: July 31, 2007

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); guidance from the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, HW-18, Rev 0); and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES

VOCs

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)					X
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X
VOCs - volatile organic compounds %D - percent difference RRF - relative response factor					
%R - percent recovery %RSD - percent relative standard deviation RPD - relative percent difference					

Comments:

Performance was acceptable with the following notes:

1. The sample was run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.
2. One method blank was associated with the sample. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.
3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.
4. One initial calibration was associated with sample. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation.
5. One continuing calibration was associated with sample. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. And all selected RRF and %D values were found reproducible through calculation.
9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.
10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.
12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

Job Number: 0707227

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE:

Lisa Horton September 11, 2007

VALIDATION REVIEWED BY
SIGNATURE:

Lisa Horton

PEER REVIEW:

Donna M. Brown September 13, 2007

DATA VALIDATION CHECKLIST

Project Name: Bally, PA
Project Number: NP000597.0006.00007
Sample Date(s): July 12, 2007
Sample Team: R. McKinney
Matrix/Number of: Air / 1
Samples: Air/ 4 Duplicates/ 0
samples Trip Blanks / 0
Field Blanks/ 0

Analyzing Laboratory: Air Toxics Ltd., Folsom, California

Analyses: Volatile organic compounds (VOCs) by USEPA method Modified TO-15

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville, New York
11747
Tel: 631-249-7600
Fax: 631-249-7610

Laboratory Report Job Number: 0707227B Dated: July 31, 2007

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); guidance from the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, HW-18, Rev 0); and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES VOCs

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)					X
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X
VOCs - volatile organic compounds %D - percent difference RRF - relative response factor					
%R - percent recovery %RSD - percent relative standard deviation RPD - relative percent difference					

Comments:

Performance was acceptable with the following notes:

1. The sample was run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.
2. One method blank was associated with the sample. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.
3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.
4. One initial calibration was associated with sample. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation.
5. One continuing calibration was associated with sample. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. And all selected RRF and %D values were found reproducible through calculation.
9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.
10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.
12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

Job Number: 0707227B

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE:

Lisa Horton September 11, 2007

VALIDATION REVIEWED BY
SIGNATURE:

Lisa Horton

PEER REVIEW:

Donna M. Brown September 13, 2007

DATA VALIDATION CHECKLIST

Project Name: Bally, PA
Project Number: NP000597.0006.00007
Sample Date(s): July 13, 2007
Sample Team: R. McKinney
Matrix/Number of Samples: Air / 1
Samples: Air/ 4 Duplicates/ 0
samples Trip Blanks / 0
Field Blanks/ 0

Analyzing Laboratory: Air Toxics Ltd., Folsom, California

Analyses: Volatile organic compounds (VOCs) by USEPA method Modified TO-15

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville, New York
11747
Tel: 631-249-7600
Fax: 631-249-7610

Laboratory Report Job Number: 0707252 Dated: August 1, 2007

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); guidance from the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, HW-18, Rev 0); and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES VOCs

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)					X
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X
VOCs - volatile organic compounds %D - percent difference RRF - relative response factor					
%R - percent recovery %RSD - percent relative standard deviation RPD - relative percent difference					

Comments:

Performance was acceptable with the following notes:

1. The sample was run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.
2. One method blank was associated with the sample. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.
3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.
4. One initial calibration was associated with sample. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation.
5. One continuing calibration was associated with sample. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. And all selected RRF and %D values were found reproducible through calculation.
9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.
10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.
12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

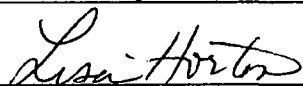
Job Number: 0707252

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE:

Lisa Horton September 7, 2007

VALIDATION REVIEWED BY
SIGNATURE:



PEER REVIEW:

Donna M. Brown September 13, 2007

DATA VALIDATION CHECKLIST

Project Name: Bally, PA
Project Number: NP000597.0006.00007
Sample Date(s): July 16, 2007
Sample Team: P. Jin
Matrix/Number of: Air / 4
Samples: Air/ 4
samples Duplicates/ 0
Trip Blanks / 0
Field Blanks/ 0

Analyzing
Laboratory: Air Toxics Ltd., Folsom, California

Analyses: Volatile organic compounds (VOCs) by USEPA method Modified TO-15 SIM

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville, New York
11747
Tel: 631-249-7600
Fax: 631-249-7610

Laboratory Report Job Number: 0707298 Dated: August 2, 2007

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); guidance from the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, HW-18, Rev 0); and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES VOCs

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)					X
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X
VOCs - volatile organic compounds %D - percent difference RRF - relative response factor %R - percent recovery %RSD - percent relative standard deviation RPD - relative percent difference					

Comments:

Performance was acceptable with the following notes:

1. Samples were run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.
2. One method blank was associated with the samples. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.
3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.
4. One initial calibration was associated with samples. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation.
5. One continuing calibration was associated with samples. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. And all selected RRF and %D values were found reproducible through calculation.
9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.
10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.
12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

Job Number: 0707298

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE:

Lisa Horton September 11, 2007

VALIDATION REVIEWED BY
SIGNATURE:

Lisa Horton

PEER REVIEW:

Donna M. Brown September 13, 2007

DATA VALIDATION CHECKLIST

Project Name: Bally, PA
Project Number: NP000597.0006.00007
Sample Date(s): July 16, 2007
Sample Team: P. Jin
Matrix/Number of: Air / 2
Samples: Air/ 4 Duplicates/ 0
samples Trip Blanks / 0
Field Blanks/ 0

Analyzing Laboratory: Air Toxics Ltd., Folsom, California

Analyses: Volatile organic compounds (VOCs) by USEPA method Modified TO-15 SIM

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville, New York
11747
Tel: 631-249-7800
Fax: 631-249-7610

Laboratory Report Job Number: 0707299

Dated: August 2, 2007

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); guidance from the "Region II Volatile Organic Analysis of Ambient Air in Canisters" (August 1994, HW-18, Rev 0); and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES VOCs

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)					X
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X
VOCs - volatile organic compounds	%D - percent difference		RRF - relative response factor		
%R - percent recovery	%RSD - percent relative standard deviation		RPD - relative percent difference		

Comments:

Performance was acceptable with the following notes:

1. Samples were run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.
2. One method blank was associated with the samples. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.
3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.
4. One initial calibration was associated with samples. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation.
5. One continuing calibration was associated with samples. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. And all selected RRF and %D values were found reproducible through calculation.
9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.
10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.
12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

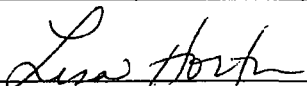
Job Number: 0707299

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE:

Lisa Horton September 11, 2007

VALIDATION REVIEWED BY
SIGNATURE:



PEER REVIEW:

Donna M. Brown September 13, 2007

SDMS US EPA Region III

Imagery Insert Form

Site Name:

Bally Groundwater

Document ID:

2095159

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Specify Type of Document(s) / Comments:



UNSCANNABLE MATERIAL:
____ Oversized or ☒ Format. Due to certain scanning equipment capability limitations, the document page(s) is not available in SDMS. The original document is available for viewing at the EPA Region 3 Superfund Records Center.

Specify Type of Document(s) / Comments:

CD: Supplemental Soil Gas Investigation & Sub-Slab
Depressurization SSD Pilot Study Summary

Document is available at the EPA Region 3 Superfund Records Center.



Specify Type of Document(s) / Comments:

